

GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF MAY 11, 1991

1. Central United States:

MORE EXCESSIVELY WET WEATHER.

Widespread flooding across the Louisiana wetlands was made worse by an additional 250–325 mm of rain. Thundershowers also soaked the remainder of southern Louisiana with 100–250 mm and much of the Southeast (except the immediate south Atlantic coast) with 50–125 mm. Farther north, 25–75 mm dampened the rest of the lower and the upper Mississippi Valley while relatively dry weather provided some relief across the remainder of the affected region. Since late March, 200–560 mm above normal rainfall has fallen on Louisiana while surpluses of 75–250 mm accumulated elsewhere (see United States Weekly Climate Highlights and the Special Climate Summary for more details) [7 weeks].

2. East-Central South America:

DRIER CONDITIONS MOVE INTO MOST AREAS, BUT SAO PAULO REMAINS WET.

Only 5–20 mm fell on Uruguay and adjacent areas, but locally heavy rains (30–120 mm) soaked southeastern Sao Paulo. Despite the decline in rainfall, six-week surpluses of 230–405 mm remain across northern Uruguay and surrounding locations while amounts since late March were 50–180 mm below normal in southeastern Sao Paulo [5 weeks].

3. Western Europe:

ABNORMALLY CHILLY WEATHER CONTINUES.

Weekly average temperatures were 2°C to 8°C below normal throughout the region, with departures of –9°C to –12°C affecting some higher elevations across Switzerland and northern Italy, prolonging the recent cool snap [4 weeks].

4. Southeastern Europe:

MODERATE RAINS PROLONG RECENT WET SPELL.

The northern 2/3 of Italy, the Alps, Austria, and the northern and

central Balkans measured widespread moderate amounts of rain (35–70 mm), with scattered totals up to 90 mm soaking parts of Italy and the Alps. Since early April, some locations have measured 50–150 mm above normal rainfall, primarily in Yugoslavia, Italy, and the Alps [5 weeks].

5. Southern Africa:

ANOTHER WARM AND DRY WEEK.

Scattered light rains (5–20 mm) dampened central, southern, and eastern South Africa, with isolated totals up to 50 mm measured along the northeast coast, while little or no rain fell elsewhere. Many locations measured 50–100 mm below normal rainfall since late March [6 weeks]. In addition, warm weather, with weekly departures of +2°C to +4°C, has affected the Transvaal for two straight weeks and the southern half of South Africa for four consecutive weeks [4 weeks].

6. Bangladesh:

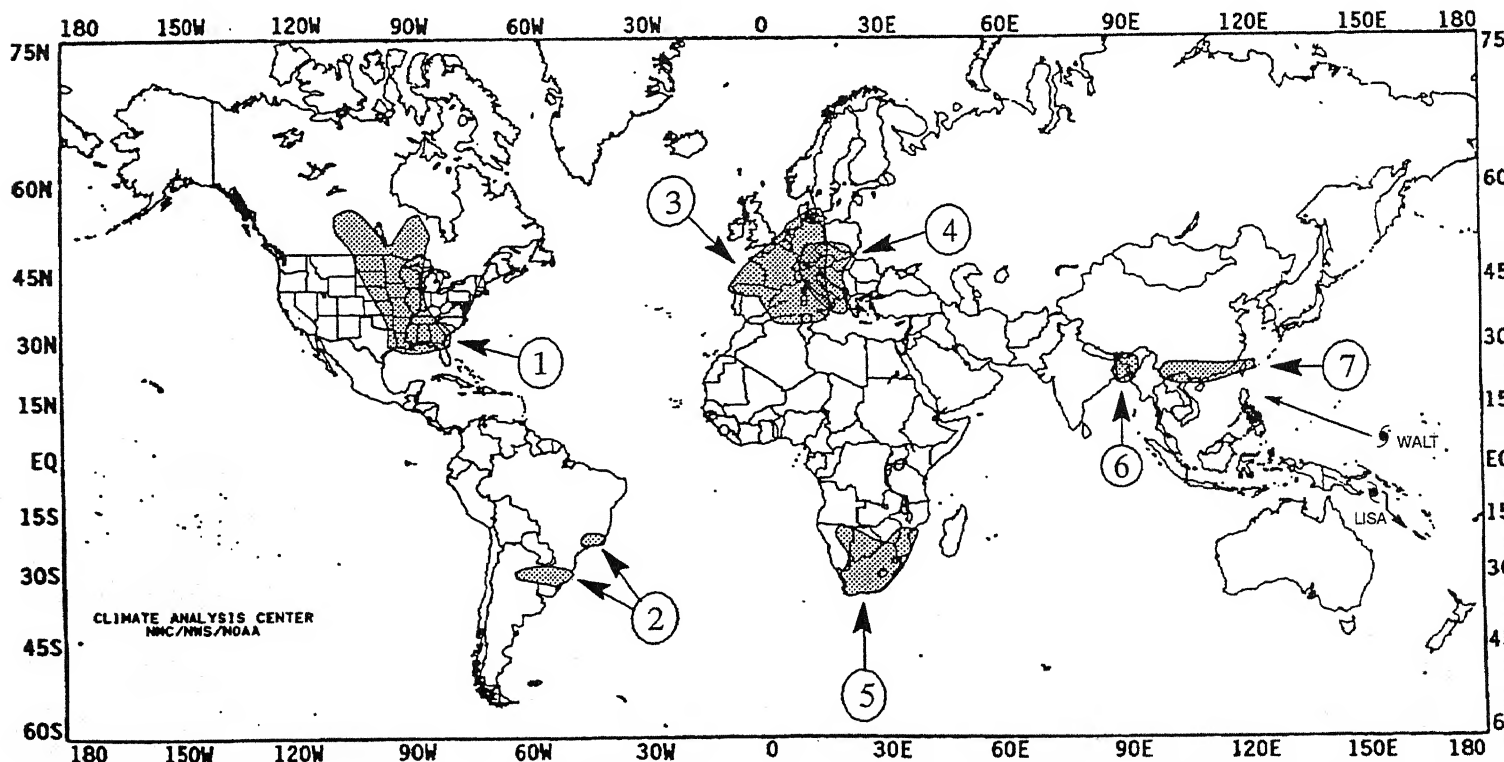
TERRIBLE WEATHER IMPEDES RELIEF EFFORTS IN BANGLADESH.

Since devastating Cyclone 2B tore through the country, several tornadoes and continued excessive rainfall has severely hampered relief efforts and caused more damage in the region. Although data from Bangladesh is suspect even under the best of circumstances, press reports indicate that at least three tornadoes and up to 1270 mm of rain have taken dozens of additional lives since the Cyclone made landfall on April 29 [2 weeks].

7. Southern China and Taiwan:

ANOTHER RAINY WEEK ELIMINATES SIGNIFICANT MOISTURE DEFICITS.

Only light rain (10–30 mm) fell across Taiwan and along the immediate coast of southeastern China, but 20–50 mm of rain in western and northwestern sections of the affected region and 50–150 mm elsewhere brought a quick end to lingering rainfall deficits [Ended after 5 weeks].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation and temperature data are this week's values, unless otherwise indicated.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two-week temperature anomalies, four-week precipitation anomalies, longer-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF MAY 5-11, 1991

Severe weather continued to batter portions of the Great Plains and Deep South again this week. Strong thunderstorms dumped up to 12 inches of rain, produced 7-inch diameter hail and spawned numerous tornadoes from the High Plains to the Gulf Coast. Heavy rain continued to fall on already-saturated and flooded ground from Texas to Georgia and contributed to a levee break on the Flat River in Louisiana (Figure 1). Parts of the South have been inundated by torrential rains the past several weeks with portions of Louisiana recording over two feet of rain since early April and over 50 inches of precipitation since the beginning of the year (see Special Climate Summary, pp. 21-22). Elsewhere, thunderstorms dumped heavy rain across portions of Illinois, spawned numerous tornadoes, damaged several homes and buildings, and downed many trees and power lines. Several tornadoes also touched-down in western South Dakota, causing widespread damage near Rapid City, SD. A thunderstorm that moved through Scott, OK dumped 8 inches of hail and generated wind gusts to 70 mph while another storm inundated parts of western Nebraska with up to 7 inches of rain which causing flash flooding on the White River. Farther west, unseasonably cold weather settled across parts of the Rockies and Far West. Up to 7 inches of snow blanketed the Cascades while record daily lows were observed from Washington to Nebraska as readings dipped below freezing. In sharp contrast, unusually warm conditions persisted across most of Alaska. Record daily highs were recorded at Barrow and Nome, AK early in the week. The mercury topped the freezing mark for the first time since September 19, 1990 at Barrow, AK when the high reached 36°F on Sunday. The mild weather rapidly melted snow-cover, raising river levels and causing flooding along the Snake, Kuskokwim and Yukon rivers.

The week began with a strong storm system over the Great Lakes and a trailing front stretched along the Mississippi Valley. Strong thunderstorms developed along the front as it pushed eastward, generating torrential rains, hail, and wind gusts up to 80 mph across parts of the South. Heavy rains also produced flooding in Illinois that closed several roads. As the front continued eastward, more thunderstorms developed and moved through the mid-Atlantic, producing hail and strong wind gusts that caused damage from Pennsylvania to Virginia. Farther north and west, wintry conditions prevailed as snow blanketed parts of the Midwest and Rockies while record cold was observed from Montana to Texas. Lows dipped near freezing across much of the Plains. In Alaska, unusually warm weather created ice-jams that forced some rivers out of their banks.

During the last half of the week, the front in the East moved into the Atlantic while the southernmost trailing edge stalled along the Gulf Coast. Thunderstorms erupted across the lower Mississippi Valley, dumping copious amounts of rain. Elsewhere, heavy rains flooded homes in Courtland, AL and left as much as 3 feet of water on Highway 20. Meanwhile, unseasonably warm conditions over-spread the Great Plains and upper Midwest toward the weekend with record daily highs reported from Colorado to Michigan. Highs in the eighties reached as far north as the Canadian border while readings in the nineties covered the southern

High Plains. In contrast, sharply colder air settled into portions of the Pacific Northwest behind a cold front that tracked into the Rockies. Heavy snow blanketed the Cascades and parts of the Sierra Nevada with up to 12 inches measured at Donner Summit in eastern California. Record lows were observed in the Far West as readings dipped below 30°F in southern Washington. The leading edge of the colder air eventually pushed into the High Plains where it collided with the summer-like warmth, generating severe thunderstorms across portions of the Great Plains. Nearly two dozen tornadoes were reported on Friday and Saturday from South Dakota to Texas. In addition, heavy rains produced flash flooding along the White River in Nebraska which forcing the evacuation of a mobile home park and several campsites. In Alaska, ice-jam flooding along the Yukon River forced the evacuation of an Air Force base in Galena, AK.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) fell along most of the Gulf Coast, the lower Mississippi Valley, the South, Tennessee Valley, northern Florida, the coastal Plains of Georgia and the Carolinas, southern sections of the north Atlantic Coast, central Oklahoma and Texas, portions of western Oregon and Washington, and southern Alaska (Table 1). More than a foot of rain deluged parts of southeastern Louisiana. Scattered heavy totals were reported in the upper Midwest, the northern High Plains, and the northern Rockies. Moderate amounts were measured across New England, the Appalachians, the Ohio Valley, the remainder of the upper Midwest, the southern Plains, western sections of the central and northern Rockies, the remainders of western Washington and Oregon, and eastern Hawaii. Little or no precipitation fell along the southern half of the Atlantic Coast, the middle Mississippi Valley, the northern and central Plains, the southern half of the Rockies, the Southwest, the Far West, and the remainders of Alaska and Hawaii.

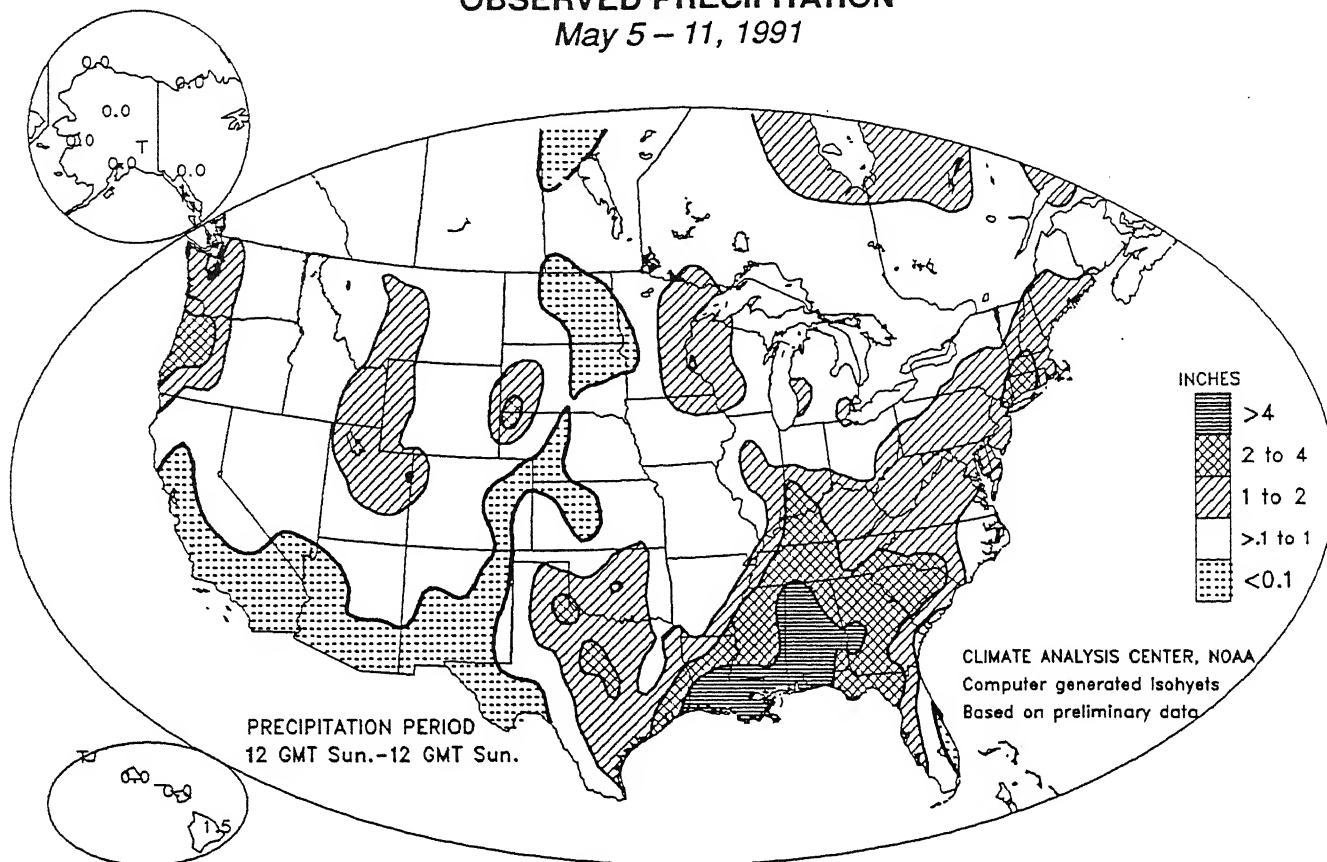
Unseasonably warm conditions prevailed across much of the eastern one-third of the nation and over a large part of the Great Plains (Table 2). Weekly departures between +3°F and +7°F were common at most locations in the Great Plains while departures up to +4°F were observed in the central Appalachians, parts of northern New England, and most of the south Atlantic Coast. Near to slightly above normal temperatures covered the remainder of the eastern third of the country as well as the Great Plains, and a few locations in the Far West. In Alaska, unusually mild conditions persisted across the northern tier for the fourth consecutive week, with weekly departures up to +11°F at Barrow, AK. Warm weather was also observed across the remainder of the state with departures between +5°F and +11°F across central Alaska and slightly lower departures farther south. In Hawaii, temperatures averaged up to 2°F above normal at Honolulu.

In contrast, unseasonably cold conditions dominated much of the West and the lower two-thirds of the Mississippi Valley (Table 3). Weekly departures down to -5°F were observed in the Great Basin, where lows dipped into the twenties, while -2°F to -4°F departures were common across the western slopes of the northern and central Rockies, the Pacific Northwest, and the lower and middle Mississippi Valley.

TABLE 1. SELECTED STATIONS WITH 3.50 OR MORE INCHES OF PRECIPITATION DURING THE WEEK OF MAY 5 - 11, 1991

<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>STATION</u>	<u>TOTAL</u> (INCHES)
PENSACOLA NAS, FL	7.26	PORT ARTHUR, TX	4.32
MOBILE, AL	6.89	COLUMBIA, SC	4.21
LAKE CHARLES, LA	6.57	NEW ORLEANS NAS, LA	4.13
PENSACOLA, FL	6.17	KODIAK, AK	4.09
LAFAYETTE, LA	6.06	HUNTSVILLE, AL	4.00
BATON ROUGE, LA	6.00	MONTGOMERY/MAXWELL AFB, AL	3.97
VALPARAISO/EGLIN AFB, FL	5.75	COLUMBUS/FT BENNING, GA	3.73
NEW ORLEANS/MOISANT, LA	5.69	GALVESTON, TX	3.65
COLUMBUS AFB, MS	5.30	HOUSTON/WM. HOBBY, TX	3.57
MONTGOMERY, AL	5.15	MERIDIAN, MS	3.57
MERIDIAN NAS, MS	4.86		

OBSERVED PRECIPITATION May 5 - 11, 1991



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F) May 5 - 11, 1991

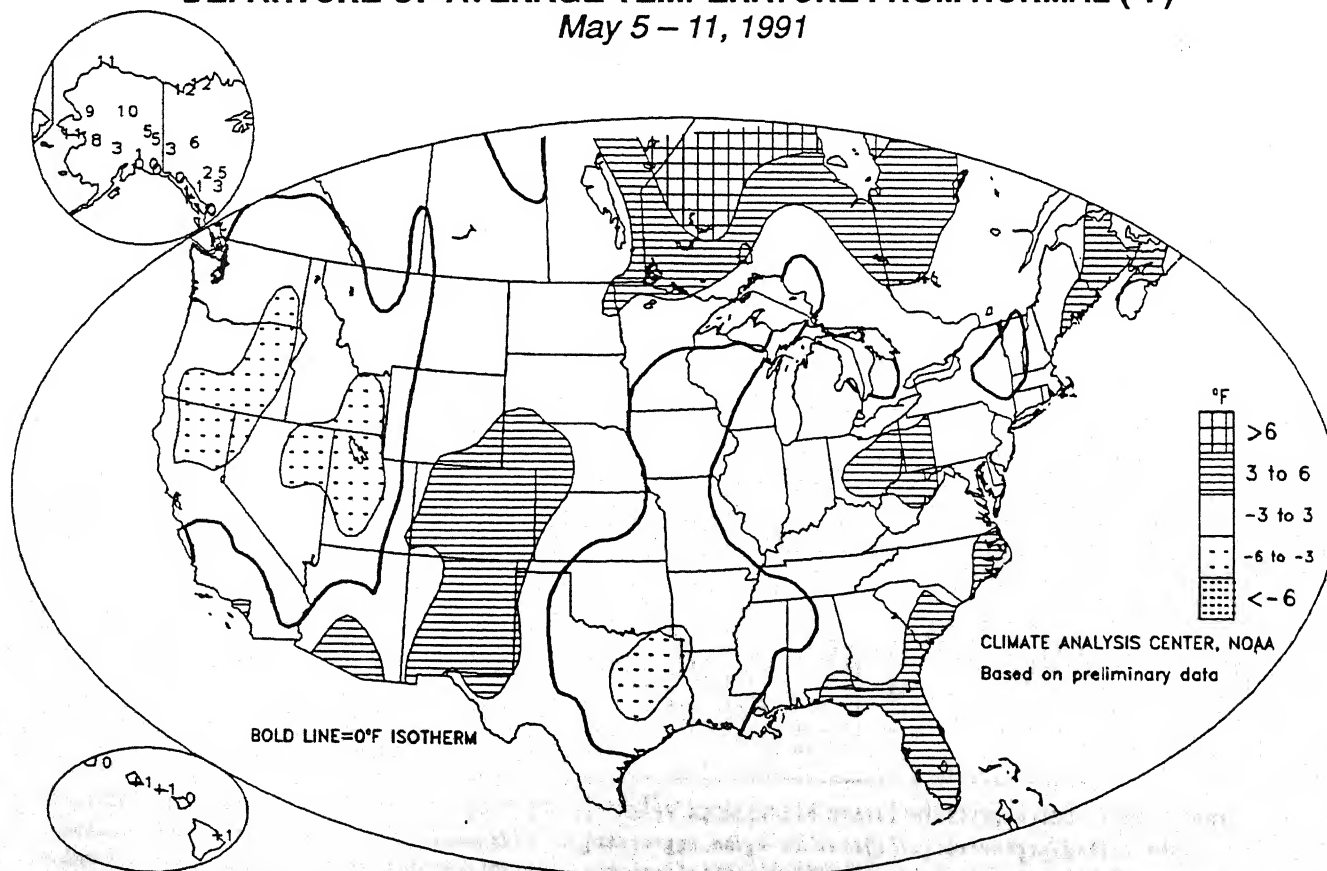


TABLE 2. SELECTED STATIONS WITH TEMPERATURES AVERAGING 5.0°F OR MORE ABOVE NORMAL FOR THE WEEK OF MAY 5 – 11, 1991

<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)	<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)
BARROW, AK	+11.4	25.7	ROSWELL, NM	+5.5	72.1
NOME, AK	+11.1	43.1	EASTPORT, ME	+5.5	52.8
BETTLES, AK	+10.2	49.8	PUEBLO, CO	+5.4	63.7
KOTZEBUE, AK	+9.3	37.0	PHOENIX, AZ	+5.3	79.8
FT LAUDERDALE/HOLLYWOOD, FL	+7.7	84.6	FORT COLLINS, CO	+5.2	58.7
BETHEL, AK	+7.3	43.9	SAVANNAH, GA	+5.1	76.6
SCOTTSBLUFF, NE	+6.8	61.1	CAPE HATTERAS, NC	+5.1	70.2
DENVER, CO	+6.6	61.1	CLOVIS/CANNON AFB, NM	+5.1	68.3
BIG DELTA, AK	+5.7	49.0	COLUMBUS, OH	+5.1	64.1
TRINIDAD, CO	+5.6	61.8	AKRON, OH	+5.1	61.4
AKRON, CO	+5.6	59.3	FAIRBANKS, AK	+5.1	49.5

TABLE 3. SELECTED STATIONS WITH TEMPERATURES AVERAGING 3.5°F OR MORE BELOW NORMAL FOR THE WEEK OF MAY 5 – 11, 1991

<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)	<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)
DELTA, UT	-5.3	50.9	WALLA WALLA, WA	-4.1	54.4
MEACHAM, OR	-4.8	41.9	UKIAH, CA	-4.1	56.1
SEXTON SUMMIT, OR	-4.8	42.4	PRICE, UT	-4.0	51.3
REDDING, CA	-4.8	61.7	MOUNT SHASTA, CA	-3.9	47.3
POCATELLO, ID	-4.5	47.1	CALIENTE, NV	-3.8	53.6
BLUE CANYON, CA	-4.4	44.8	IDAHO FALLS, ID	-3.6	47.1
ELKO, NV	-4.2	45.8	PENDLETON, OR	-3.6	52.7
OGDEN/HILL AFB, UT	-4.2	51.8	TEXARKANA, AR	-3.6	66.6

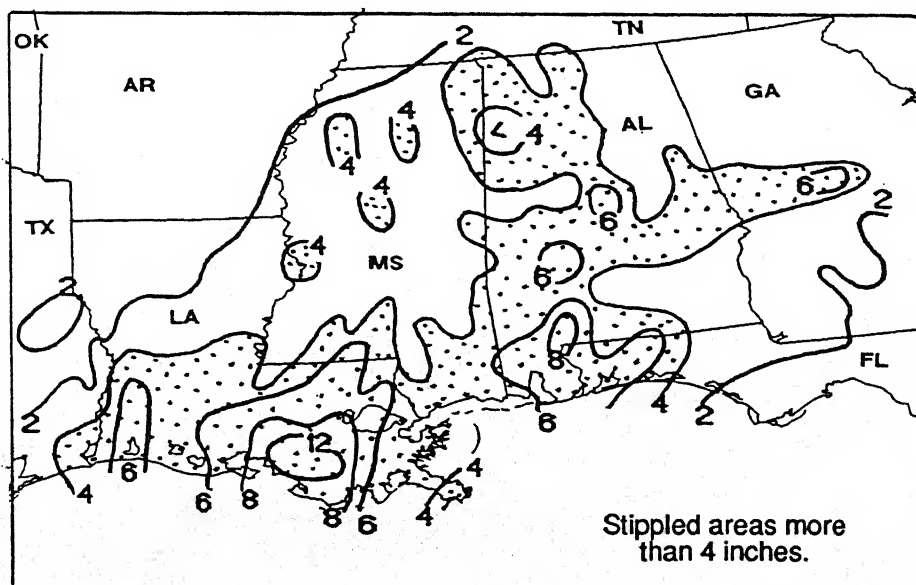
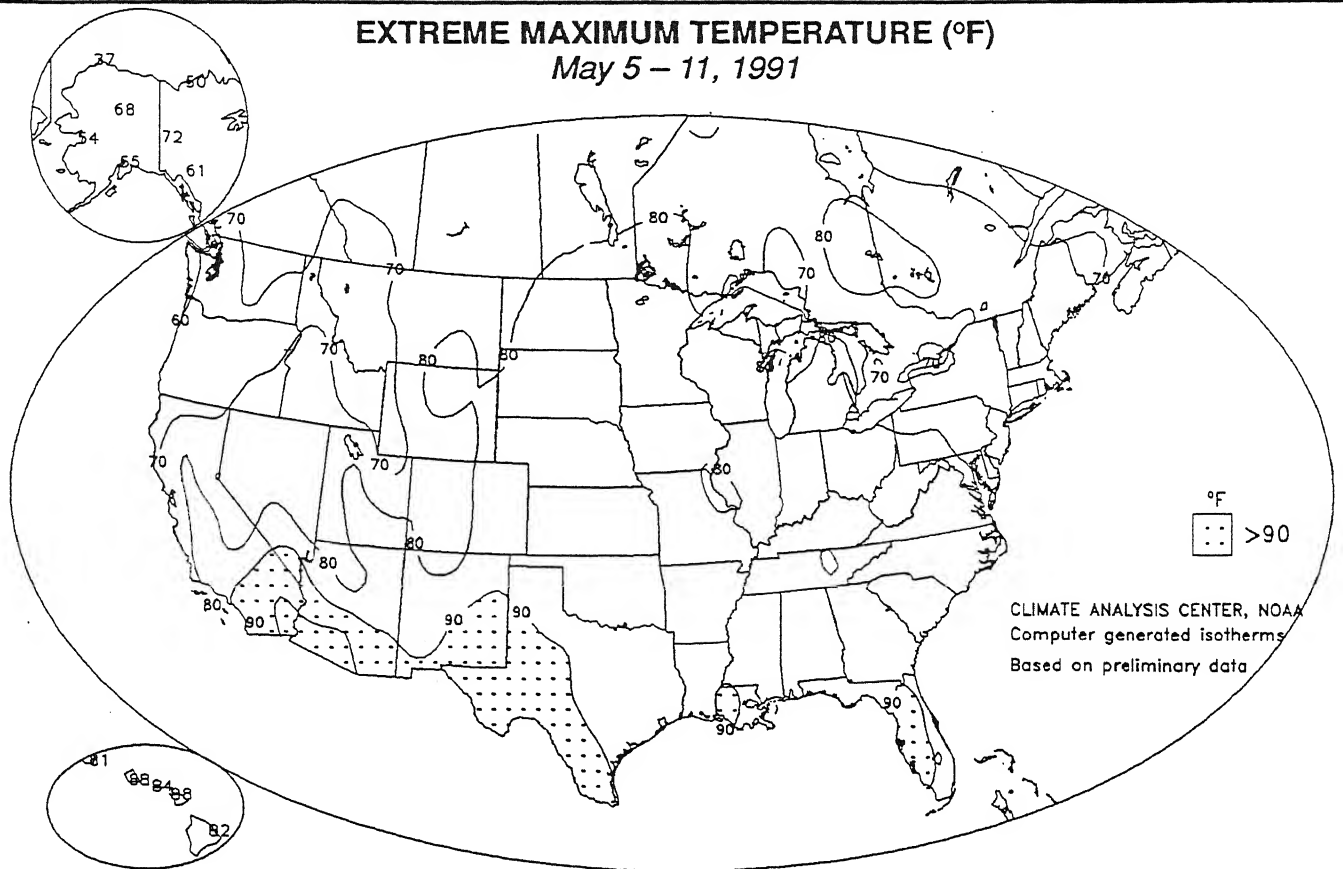


FIGURE 1. Total Precipitation Across the Lower Mississippi Valley During May 5 – 11, 1991. Isopleths drawn only for 2, 4, 6, 8, and 12 inches. Another week of excessive rainfall affected the region, aggravating the widespread flooding, crop damage, navigational problems, and fresh water shortages that already plagued the region due to weeks of incessant torrential downpours and long-term moisture surpluses dating back to October 1990 in some areas.

EXTREME MAXIMUM TEMPERATURE (°F)

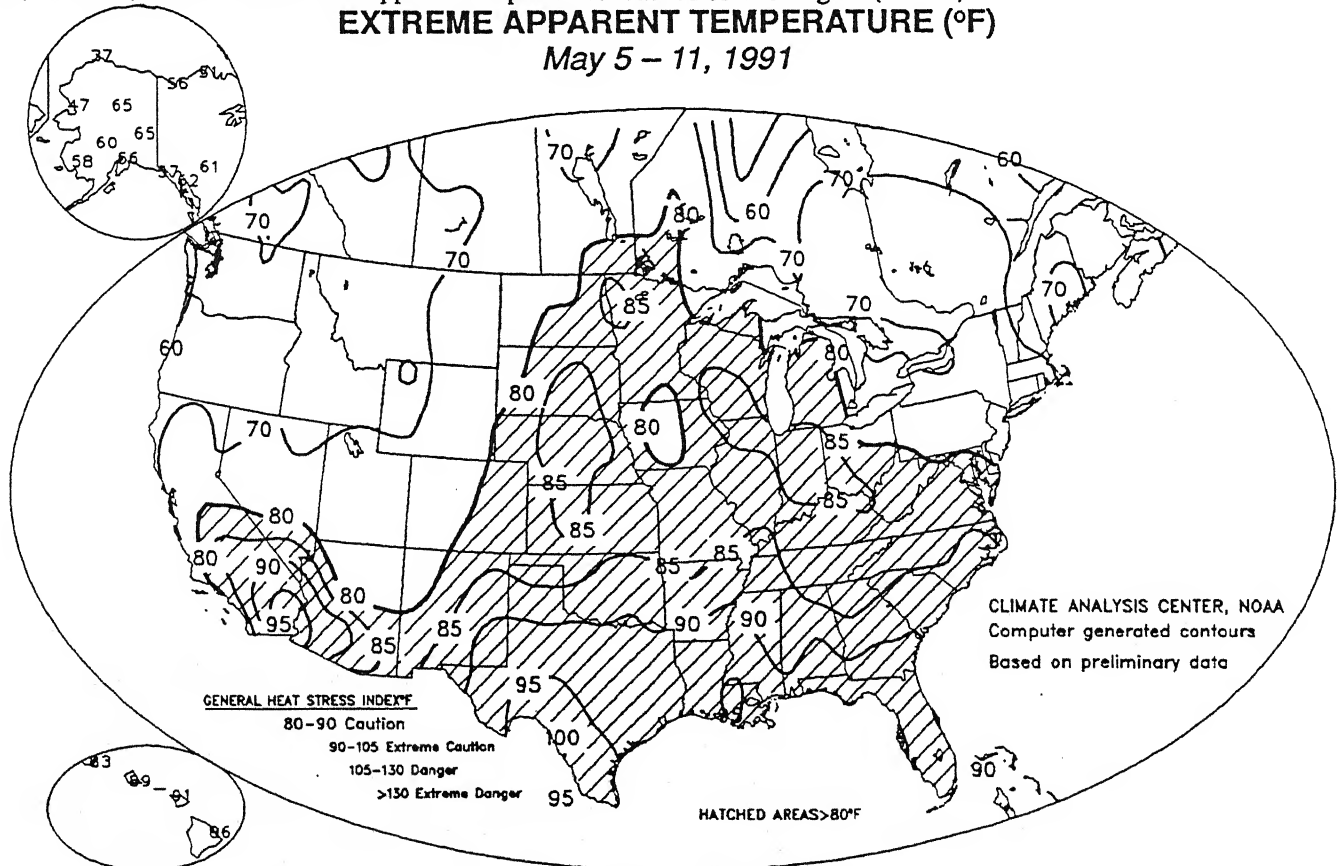
May 5 – 11, 1991



With warm, summer-like air streaming northward, maximum temperatures during the week reached the eighties as far north as south-central Canada (top). High temperatures and humidity produced uncomfortable conditions in parts of the central and southern Plains, Midwest, and the Southeast as apparent temperatures reached 85°F or higher (bottom).

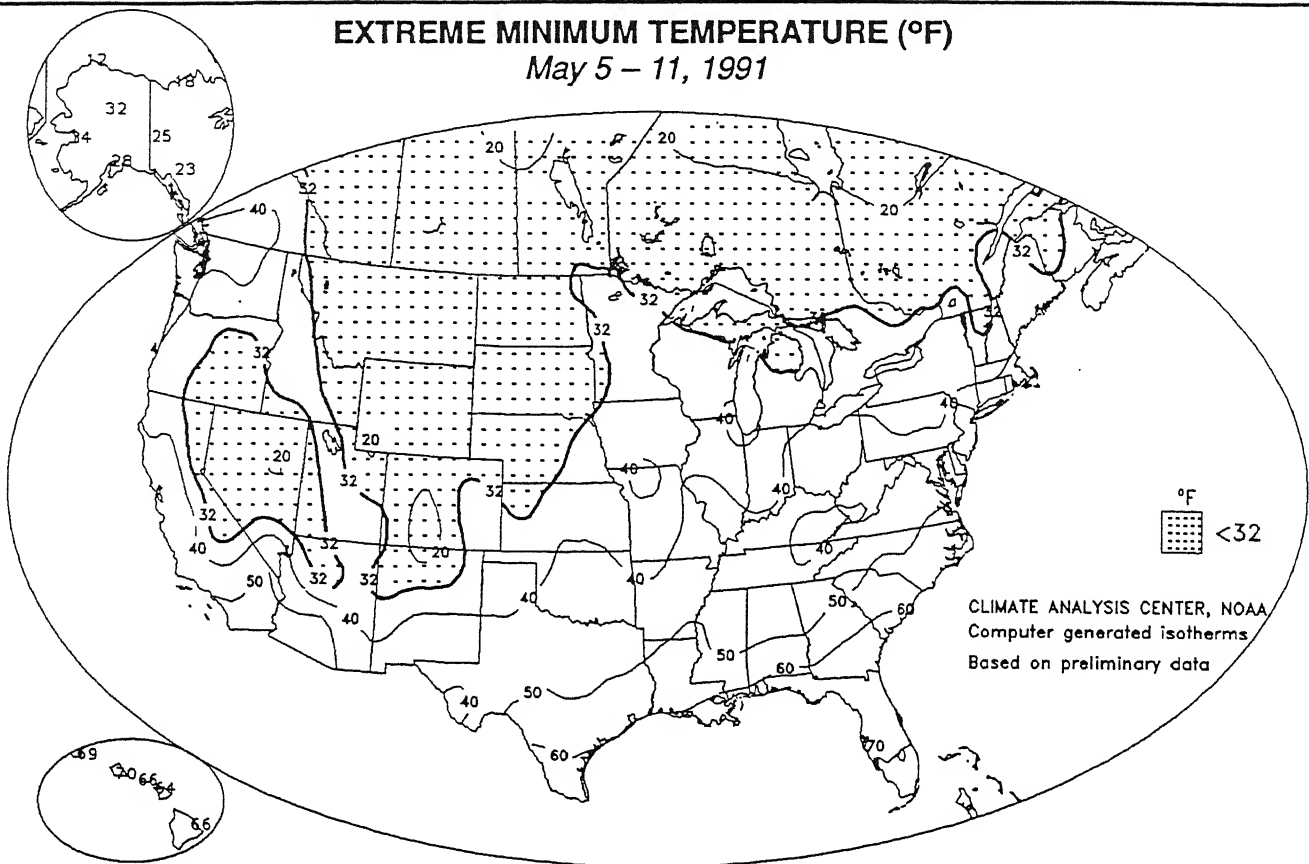
EXTREME APPARENT TEMPERATURE (°F)

May 5 – 11, 1991



EXTREME MINIMUM TEMPERATURE (°F)

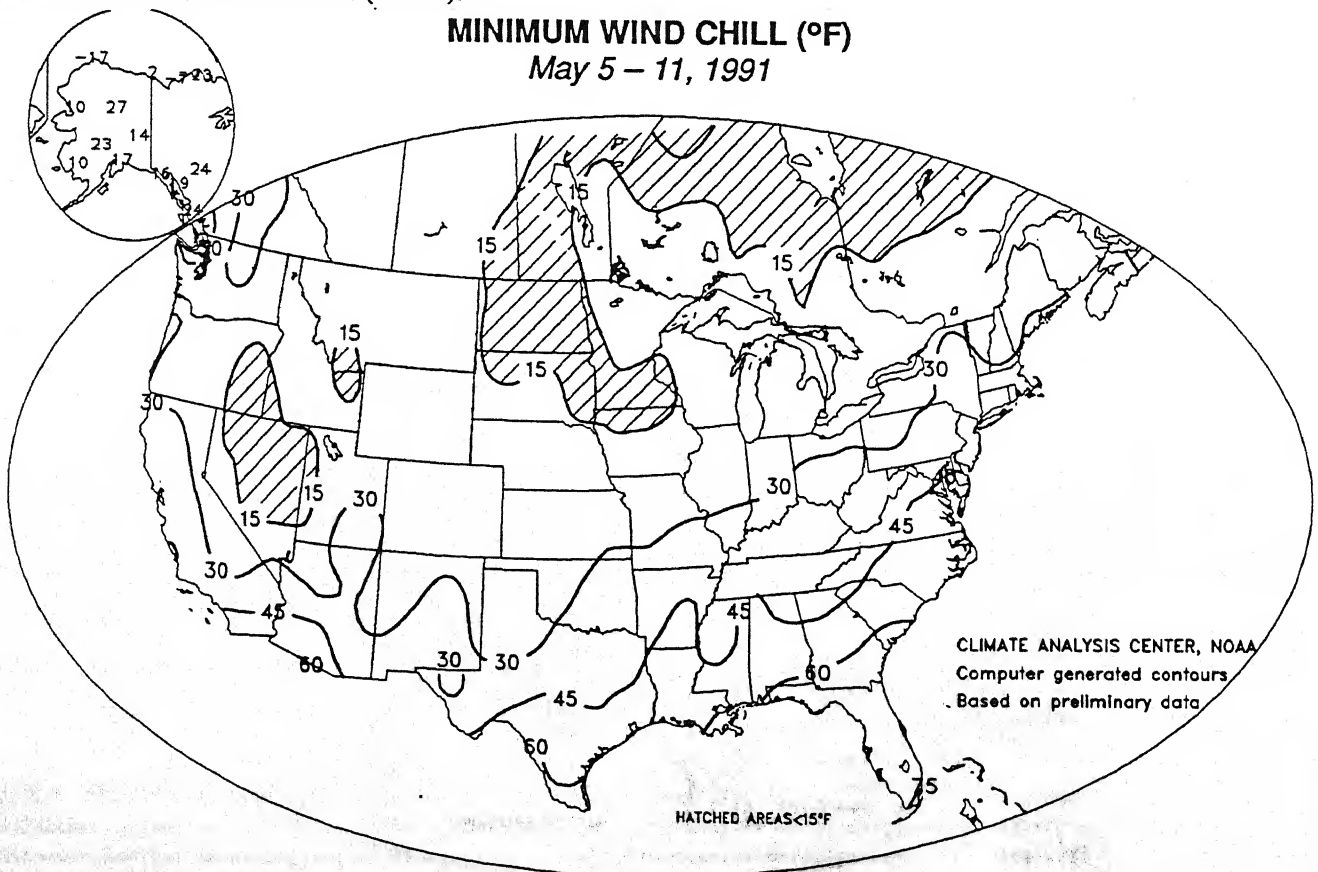
May 5 - 11, 1991



Sub-freezing temperatures continued to linger in the Great Basin, Rockies, and northern and central Plains with temperatures dipping below 20°F in the higher elevations (top). As a result of brisk northerly winds, wind chill temperatures dipped to 15°F and lower in parts of the Great Basin and northern Plains (bottom).

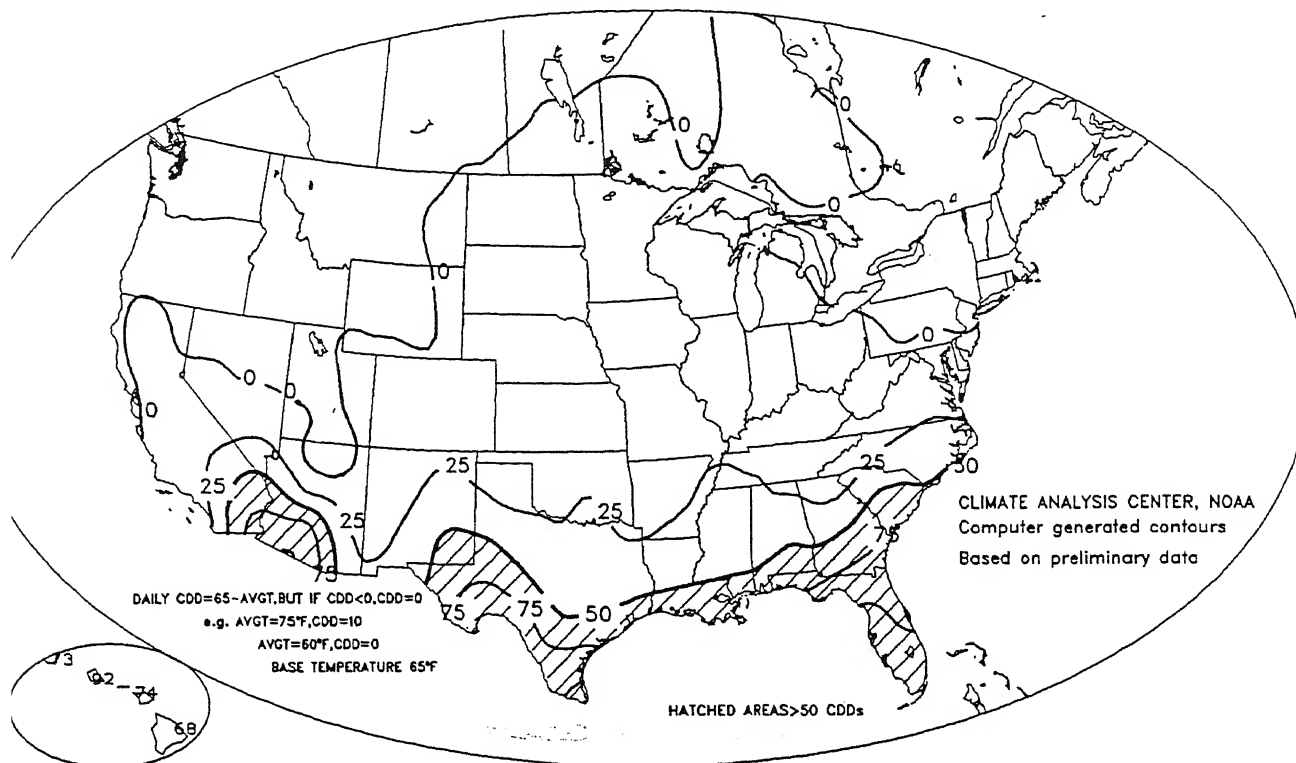
MINIMUM WIND CHILL (°F)

May 5 - 11, 1991



WEEKLY TOTAL COOLING DEGREE DAYS

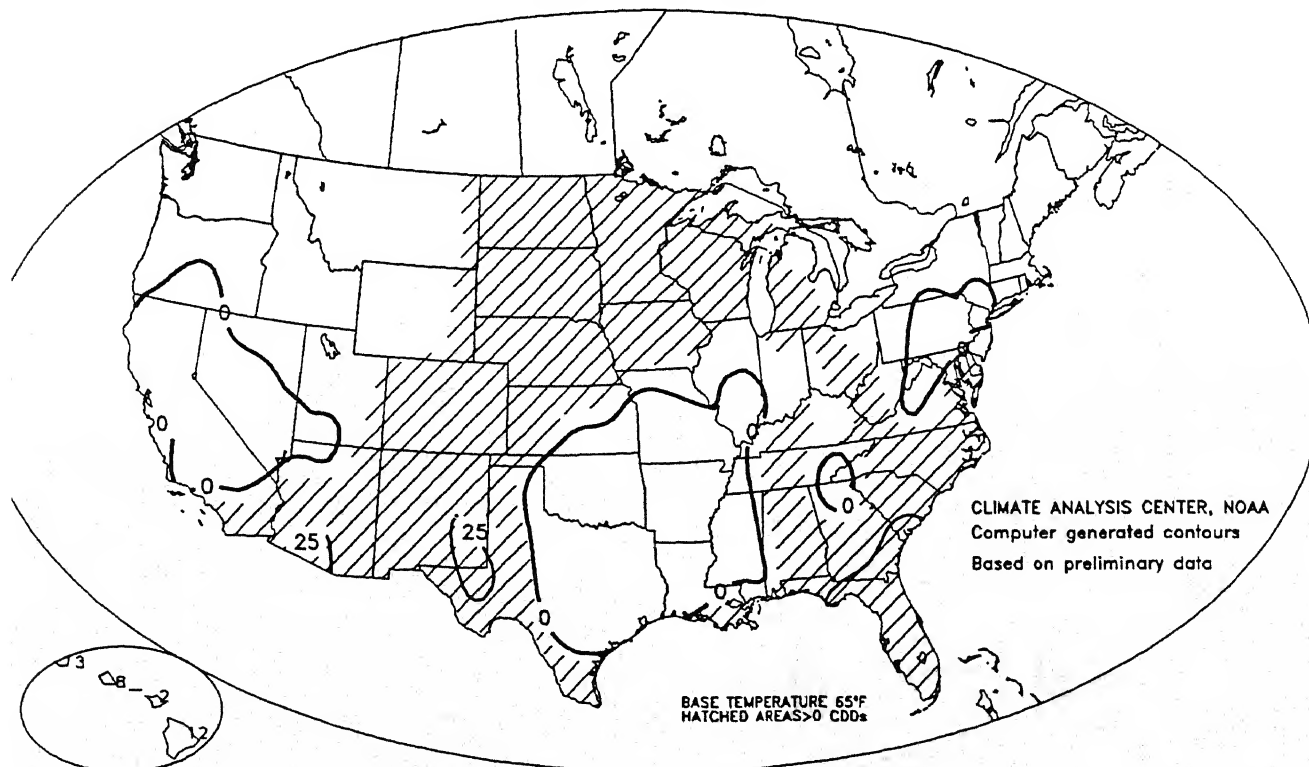
May 5 - 11, 1991



vide cooling usage was up slightly from the previous week with the more significant consumption (>50 CDD's) confined to the y hot areas of the desert Southwest and the Gulf and south Atlantic Coasts (top). As a result of the warmer weather, much of thwest, central and northern Rockies, Plains, upper Midwest, middle Atlantic, and Southwest experienced slightly above normal demand (bottom).

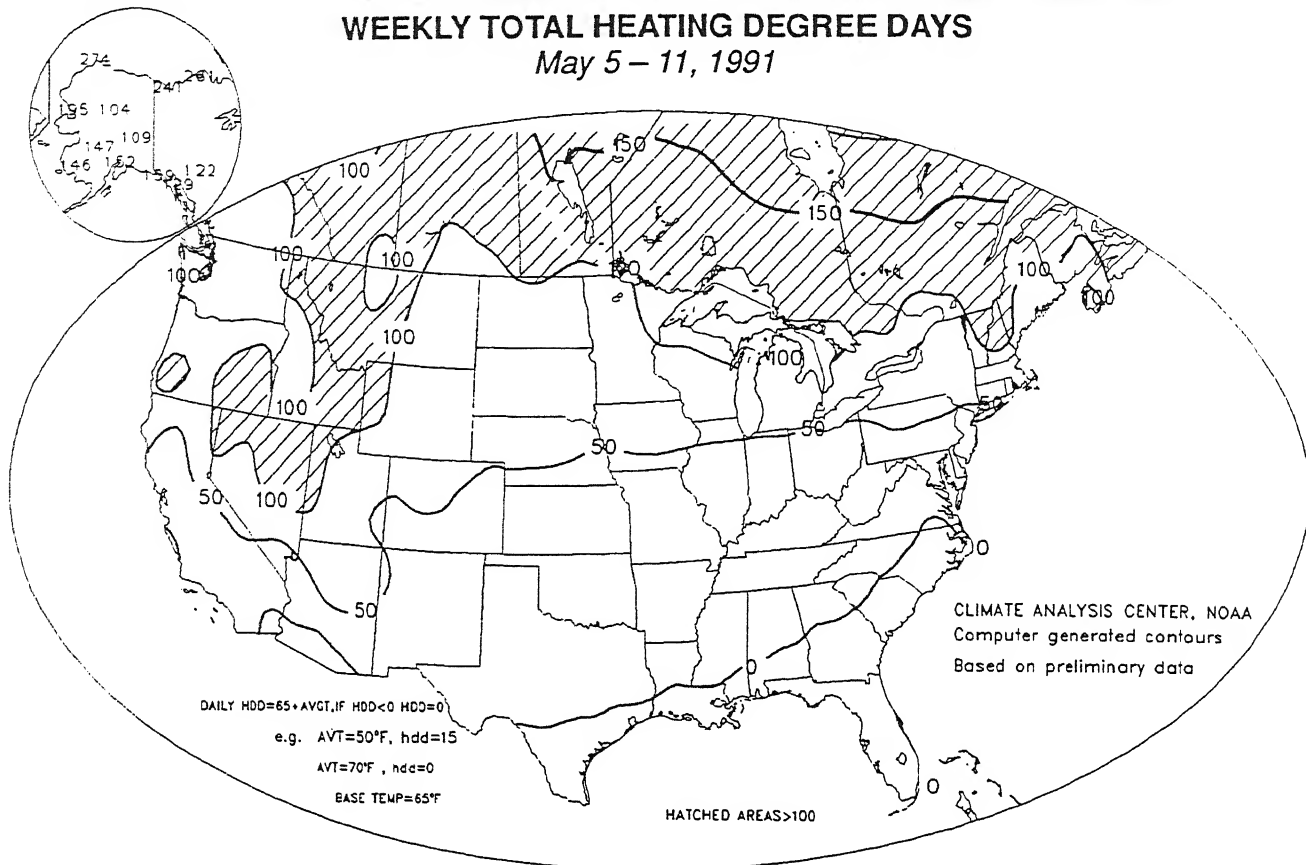
WEEKLY DEPARTURE FROM NORMAL CDD

May 5 - 11, 1991



WEEKLY TOTAL HEATING DEGREE DAYS

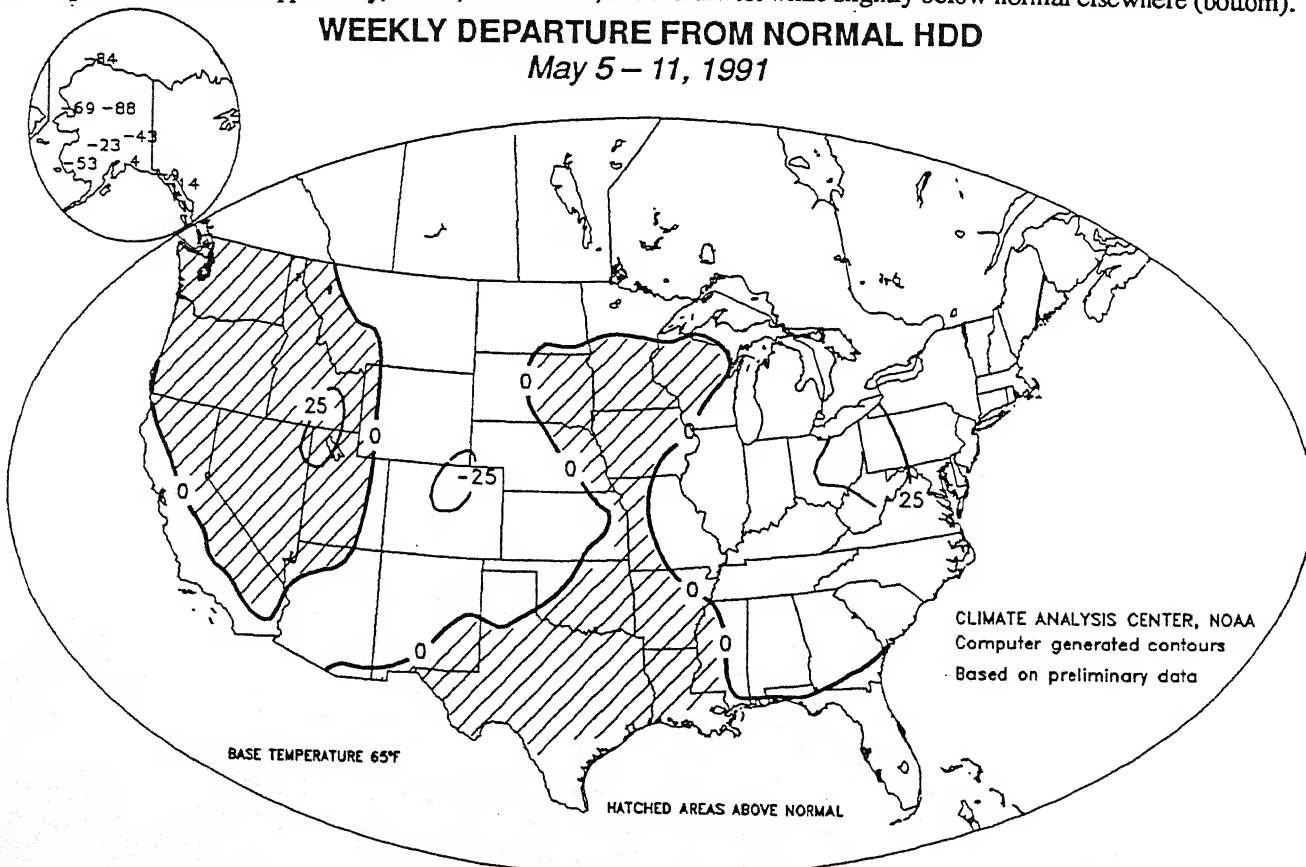
May 5 - 11, 1991



A moderation of temperatures in the West combined with the continued warmth in the East reduced nationwide heating consumption as moderate usage (>150 HDD'S) was well north of the Canadian border (top). Heating demand during the week was slightly above normal in parts of the Mississippi Valley, Plains, Great Basin, and Northwest while slightly below normal elsewhere (bottom).

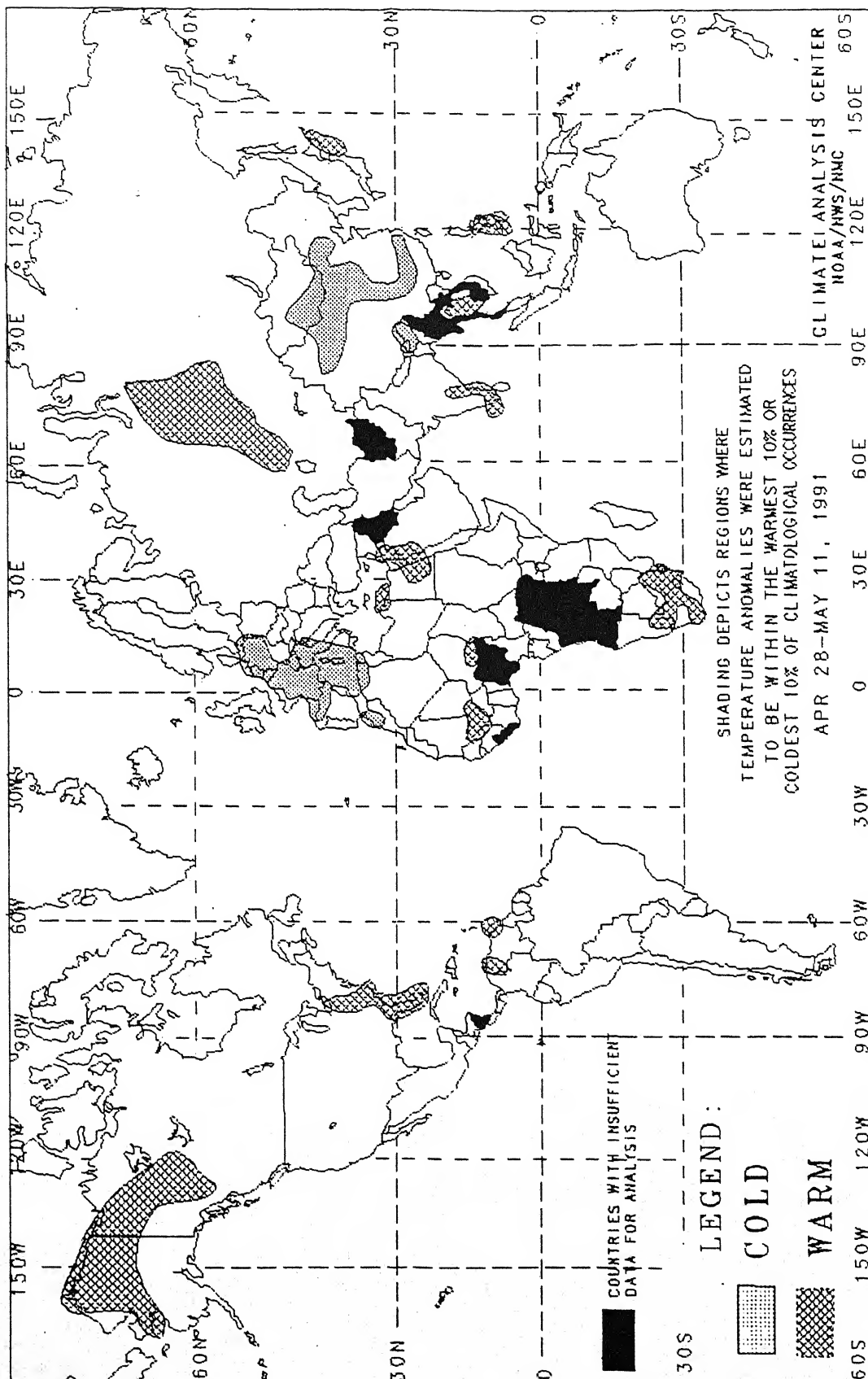
WEEKLY DEPARTURE FROM NORMAL HDD

May 5 - 11, 1991



2-WEEK GLOBAL TEMPERATURE ANOMALIES

APRIL 28 – MAY 11, 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

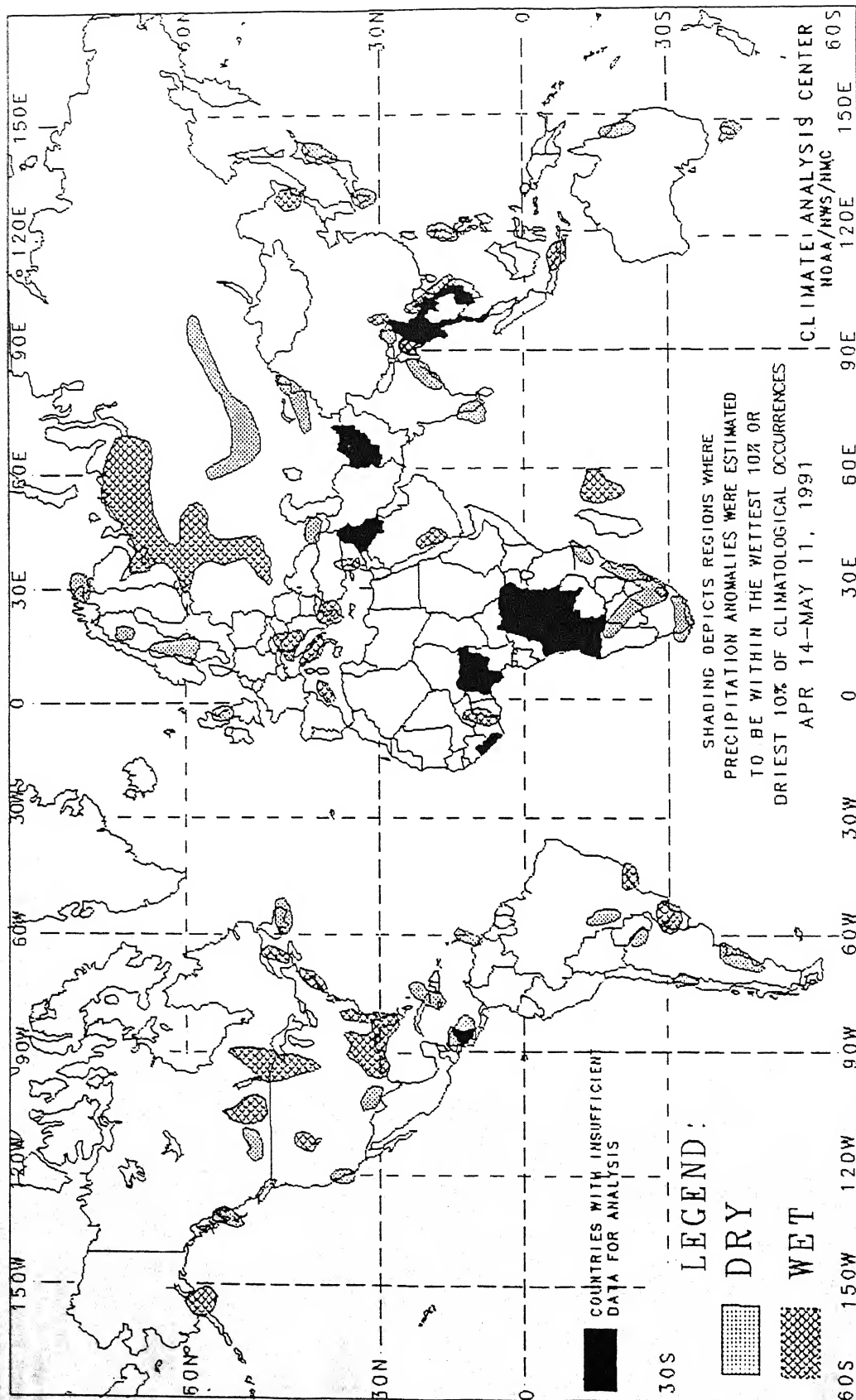
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

4-WEEK GLOBAL PRECIPITATION ANOMALIES

APRIL 14 - MAY 11, 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

UNITED STATES MONTHLY CLIMATE SUMMARY

APRIL 1991

Powerful thunderstorms repeatedly unleashed severe weather, including tornadoes, large hail, high winds, torrential rains, and severe flooding, across the lower Mississippi Valley, the Gulf and southern Atlantic coasts, the central Plains, and the Northeast. Nationally, the barrage of tornadoes during the first four months of 1991 is unprecedented. No other year since records have been kept has counted nearly as many twisters during January–April (front cover). Incessant rain in the Mississippi Delta forced evacuation of many homes and saturated soils, delaying cotton planting by weeks. A number of stations in the South established new April rainfall records (Table 5). For example, Brownsville, TX, was inundated with 10.35 inches, far surpassing their previous record of 6.62 inches, while Shreveport, LA, obliterated their old record of 11.9 inches with 21.84 inches. Elsewhere, unseasonably heavy early-month rain in the Pacific Northwest brought record April totals to Seattle–Tacoma, WA (6.53 inches) and Astoria, OR (7.72 inches). Spring storms also brought above normal precipitation from the northern Intermountain West to New England, parts of the middle Mississippi Valley, and the Atlantic coast. Storm systems also blanketed the northern Intermountain West, northern and central Rockies, and northern Plains with heavy snow, providing beneficial moisture. In contrast, dry conditions prevailed across California, the Southwest, southern High Plains, and parts of the Ohio Valley, mid Atlantic, Northwest, and central Alaska.

Unseasonable warmth again dominated the nation east of the Rockies as well as Alaska. Numerous stations averaged 5°F or more above normal from the northern Plains to the northern Atlantic coast and across northern and central Alaska (Table 3); meanwhile, stations in the Northeast and Southeast broke records for highest average April temperature (Table 6). Key West, FL, experienced their highest April temperature since at least 1945 (Table 7) and closed the month with 8 consecutive record high minimum temperature readings. Nationwide, temperatures continued to average above the long-term mean (page 12), with April 1991 ranking as the 20th warmest April on record (since 1895) and the seventh consecutive April with above normal temperatures. The weather pattern during the month that pumped moist, mild air into the eastern two-thirds of the country, also drained cool air into the West. A number of stations west of the continental divide averaged 2°F or more below normal (Table 4 and Figure 3).

The month began on a tranquil note as generally dry and mild weather prevailed. More than a 100 daily highs were set during the first week from Montana to New England. A late-season storm, however, dumped heavy rain in the Pacific Northwest while thunderstorms erupted in Florida, generating locally heavy rain. Storms in the central Plains produced large hail and tornadoes, but also provided needed crop moisture. Farther south, an explosion of widespread, slowly-moving thunderstorms dumped up to 19.1 inches of rain on southern Texas during the first week of April. Fortunately, only sporadic light precipitation affected the region during the rest of the month. As the month progressed, major spring storms developed in the Plains, and some eventually edged eastward to the Atlantic coast. Torrential rains of 10 inches or more deluged eastern Texas and the lower Mississippi Valley. A 4-day storm, ending on the 14th, dumped 22.6 inches of rain on Bossier City, LA. Meanwhile, heavy snow fell from the northern and central Rockies to the upper Great Lakes. On April 9th, there were more than 400 reports of large hail or damaging winds, including 37 tornadoes, from New York to Mississippi.

Powerful storm systems continued to march across the eastern two-thirds of the nation through the end of the month. Incessant

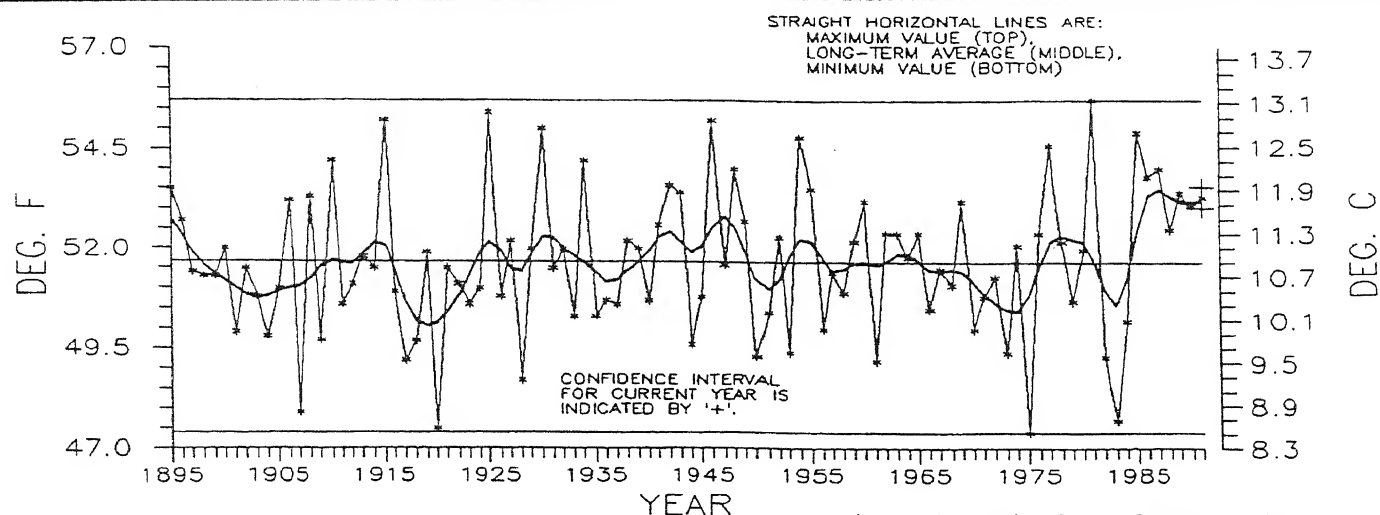
rain aggravated the extensive flooding across Louisiana, Arkansas, Mississippi, and western Tennessee. Widespread flooding also plagued the western Corn Belt, Northeast, and south Atlantic Coast while winter-like storms brought more heavy snow to the Rockies and upper Great Lakes. Severe weather outbreaks with accompanying tornadoes also continued, with the deadliest occurrence on the 26th when twisters took more than 2 dozen lives in the Wichita, KS area.

According to the River Forecast Centers, the greatest monthly precipitation (more than 10 inches) was reported in a broad area from eastern Texas and southeastern Oklahoma to western Tennessee and western Alabama as well as the Pacific Northwest (Table 1, Figures 1 and 2). Much of the lower Mississippi Valley was inundated by excessive rainfall, with amounts up to 33.5 inches deluging northwestern Louisiana and 20–25 inches inundating northeastern and southeastern parts of the state. More scattered amounts of above 10 inches were reported in Georgia, Iowa, southern Alaskan, and Hawaii. In addition, above normal precipitation covered most of the northern and southeastern states, much of the lower and middle Missouri Valley, the Atlantic Coast, and southeastern Alaska (Figures 1). The wet April in the central Plains alleviated dryness in portions of the hard red winter wheat belt. Nationwide, the standardized precipitation index ranks April 1991 as the 43rd wettest April in 97 years of record (page 12). The East–North Central and South regions had the 4th and 10th wettest April on record, respectively (page 12). Six states have observed one of their ten wettest January–April periods, with Louisiana off to the wettest start on record (page 18).

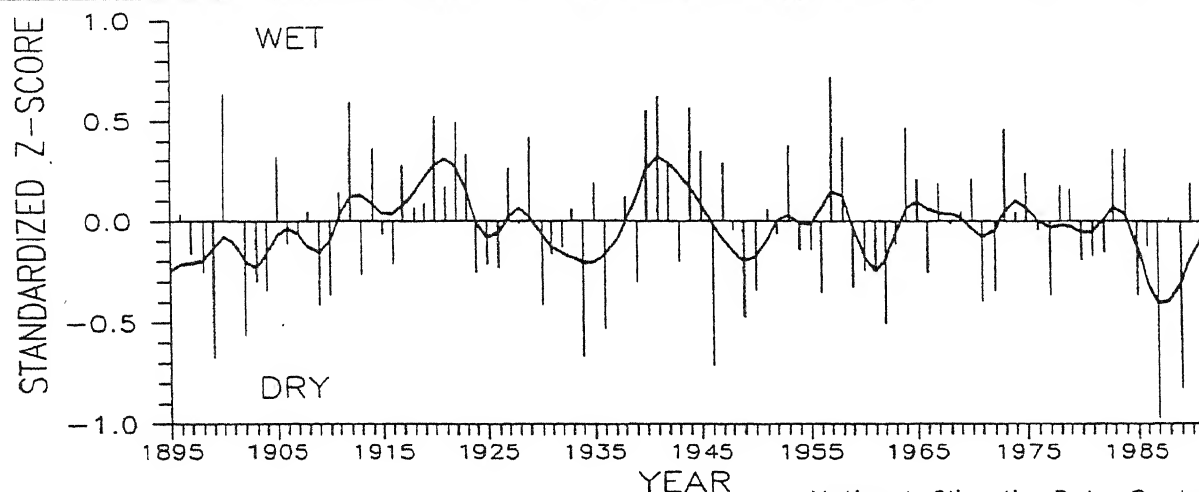
In sharp contrast, a drier than normal April followed the exceptionally heavy March rains in California (Figure 5). Few significant precipitation events should affect the state during the next several months as the dry season (May–September) progresses. Elsewhere, well below normal precipitation was found from the Far West to the southern Great Plains, in portions of the northern Intermountain West, and across the northern and central Plains, Ohio Valley, mid-Atlantic, Alaska, and Hawaii (Table 2, Figures 1 and 2). Precipitation, however, is typically light in the Far West, Southwest, central and southern High Plains, and central and northern Alaska during April.

Unseasonably warm conditions covered much of the country, including Alaska, with two-thirds of the nation averaging at least 2°F above normal (Table 3, Figure 3). Temperatures in Hawaii also averaged near normal to slightly above normal. The warmth was climatologically significant across most of the eastern half of the country and in pockets through the Southwest and Northwest (Figure 4). Portions of the Southeast, Northeast, and Great Lakes region recorded April temperatures in the top (warm) ten percentiles. Regionally, the Southeast, Northeast, Central, and East–North Central had their 5th, 6th, 11th, and 13th warmest April on record, respectively (page 12). In addition, twenty-one states experienced one of the top ten warmest January–April periods on record this year (page 19).

Subnormal April temperatures were limited to the Rockies, Great Basin, and Far West. Departures less than –2°F were observed only in the Intermountain West and central Rockies and were climatologically significant only in parts of those areas (Table 4, Figures 3 and 4). The Northwest was the only region to be in the lower (cooler) third of the historical distribution (page 12). For the January–April period, only Utah (34th coldest) ranked in the bottom (cooler) half of the historical distribution.



Nationally Averaged April Temperatures, 1895–1991, As Computed By The National Climatic Data Center. April 1991 was the seventh consecutive April with above normal temperatures, sharply contrasting with the three chilly Aprils that followed the record warm April of 1981.



National Mean April Precipitation Index, 1895–1991, As Computed By The National Climatic Data Center. The standardized Z-score was only slightly above the long-term mean despite the excessive precipitation measured across the lower Mississippi Valley and Deep South. Interestingly, the nationally-averaged April precipitation total, which is biased toward wet spells in typically wet areas (such as the lower Mississippi Valley), had April 1991 as the eighth wettest April since 1895.

TEMPERATURE AND PRECIPITATION RANKINGS FOR APRIL 1991, BASED ON THE PERIOD 1895 TO 1991. 1 = DRIEST/COLDEST AND 97 = WETTEST/HOTTEST.

<u>REGION</u>	<u>PRECIPITATION</u>	<u>TEMPERATURE</u>
NORTHEAST	60	92
EAST NORTH CENTRAL	94	85
CENTRAL	64	87
SOUTHEAST	79	93
WEST NORTH CENTRAL	84	62
SOUTH	88	81
SOUTHWEST	20	38
NORTHWEST	69	31
WEST	21	34
NATIONAL	55	78

National Climatic Data Center

Top 10 rankings : **BOLD** Bottom 10 rankings : *Italics*

TABLE 1. SELECTED STATIONS WITH 150% OR MORE OF THE NORMAL PRECIPITATION AND 9.00 INCHES OR MORE PRECIPITATION; OR, STATIONS WITH 12.00 INCHES OR MORE PRECIPITATION AND NO NORMALS DURING APRIL 1991.

<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>PCT. OF</u> <u>NORMAL</u>	<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>PCT. OF</u> <u>NORMAL</u>
BOSSIER CITY/BARKSDALE AFB, LA	23.15	***	MERIDIAN, MS	11.78	217.7
SHREVEPORT, LA	21.84	467.7	VICTORIA, TX	11.09	424.9
NEW ORLEANS NAS, LA	19.13	***	LITTLE ROCK, AR	11.01	204.3
MONROE, LA	18.42	372.1	SAVANNAH, GA	10.57	333.4
MEMPHIS, TN	17.13	297.9	MUSCLE SHOALS, AL	10.51	223.1
NEW ORLEANS/LAKE FRONT, LA	17.02	***	MOBILE, AL	10.43	195.7
JACKSON, MS	15.95	281.8	BROWNSVILLE, TX	10.35	663.5
NEW ORLEANS/MOISANT, LA	15.29	341.3	VALPARAISO/EGLIN AFB, FL	10.04	189.1
MEMPHIS NAS, TN	14.99	***	ILIAMNA, AK	10.04	1000.0
ALEXANDRIA/ENGLAND AFB, LA	14.68	265.5	WEST PALM BEACH, FL	9.54	298.1
GREENWOOD, MS	14.25	257.2	WEST PLAINS, MO	9.52	205.2
YAKUTAT, AK	14.12	164.0	BILOXI/KEESLER AFB, MS	9.51	196.1
PINE BLUFF, AR	13.12	248.5	ASTORIA, OR	9.47	199.4
COLUMBUS AFB, MS	12.54	***	BLYTHEVILLE AFB, AR	9.39	216.4
TUPELO, MS	12.16	***	PALACIOS, TX	9.21	357.0
LITTLE ROCK AFB, AR	12.15	***	BATON ROUGE, LA	9.18	164.2
EL DORADO, AR	11.83	220.3			

NOTE: Stations without precipitation normals are indicated by asterisks.

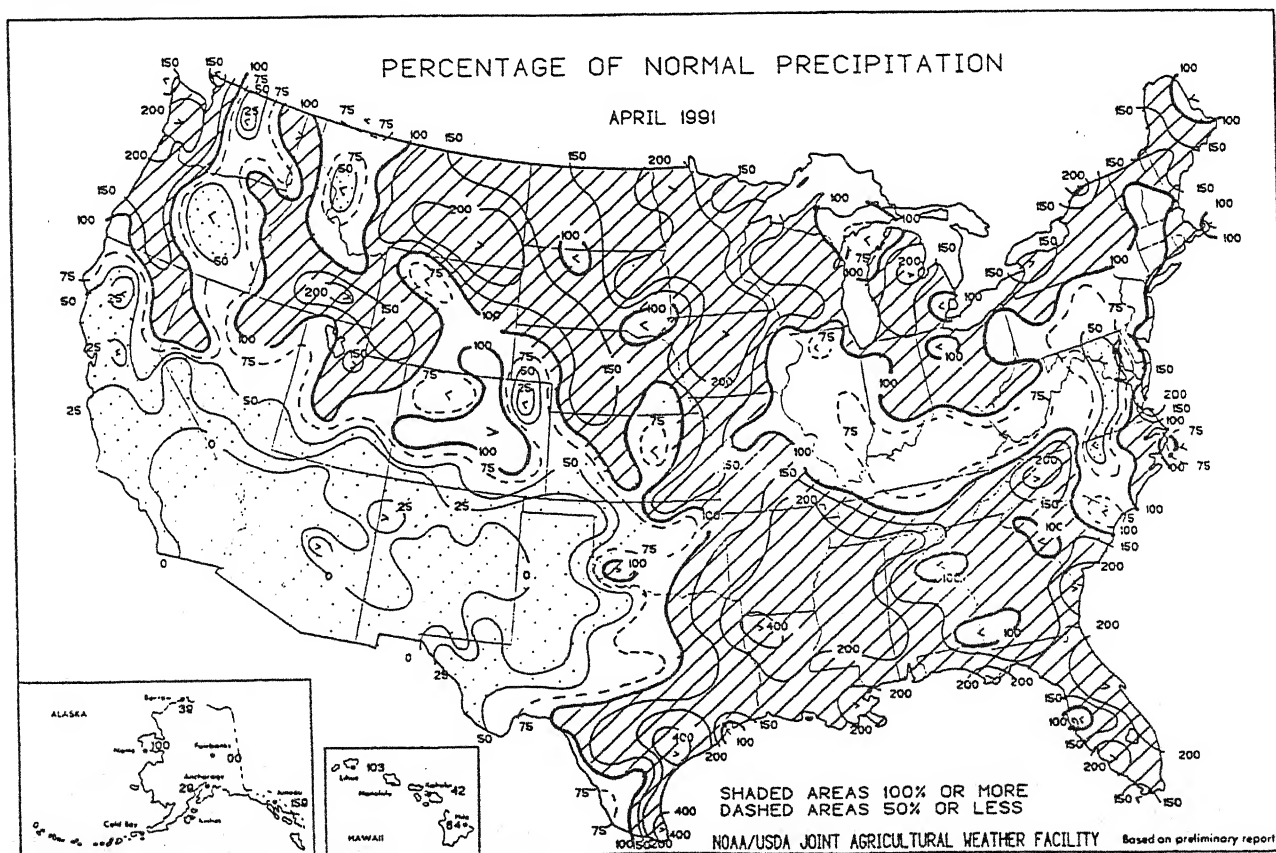


FIGURE 1. April 1991 Percent of Normal Precipitation. Isopleths drawn for 0, 25, 50, 75, 100, 150, 200, and 400 percent. Much of the nation recorded above normal rainfall, with more than twice the normal falling on parts of the coastal Pacific Northwest, northern High Plains, upper Midwest, lower Mississippi Valley, and south Atlantic coast. In contrast, less than half of normal rainfall was measured in portions of the interior mid-Atlantic, the Cascades, and portions of the southern High Plains, southern Rockies, desert Southwest, and California.

TABLE 2. SELECTED STATIONS WITH 70% OR LESS OF THE NORMAL PRECIPITATION AND NORMAL PRECIPITATION OF 3.00 INCHES OR MORE DURING APRIL 1991.

<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>PCT. OF</u> <u>NORMAL</u>	<u>NORMAL</u> (INCHES)	<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>PCT. OF</u> <u>NORMAL</u>	<u>NORMAL</u> (INCHES)
FINDLAY, OH	1.64	47.4	3.46	GOLDSBORO, NC	2.37	63.9	3.71
BALTIMORE, MD	1.68	50.5	3.33	EVANSVILLE, IN	2.56	62.7	4.08
ENID/VANCE AFB, OK	1.69	54.2	3.12	TULSA, OK	2.58	62.5	4.13
MARTINSBURG, WV	1.80	55.7	3.23	LOUISVILLE, KY	2.61	63.8	4.09
WASHINGTON/DULLES, VA	1.80	57.3	3.14	BLUE CANYON, CA	2.63	48.3	5.45
CAPE HATTERAS, NC	1.96	61.3	3.20	ANDERSON, SC	2.64	67.0	3.94
BLUEFIELD, WV	1.96	55.5	3.53	JACKSON, KY	2.67	66.8	4.00
ROCKFORD, IL	2.15	51.2	4.20	LEXINGTON, KY	2.70	67.3	4.01
EASTPORT, ME	2.22	67.5	3.29	BOWLING GREEN, KY	2.75	65.8	4.18
ALTOONA, PA	2.23	62.8	3.55	ANNETTE ISLAND, AK	4.44	50.4	8.81
WILLIAMSPORT, PA	2.36	67.0	3.52				

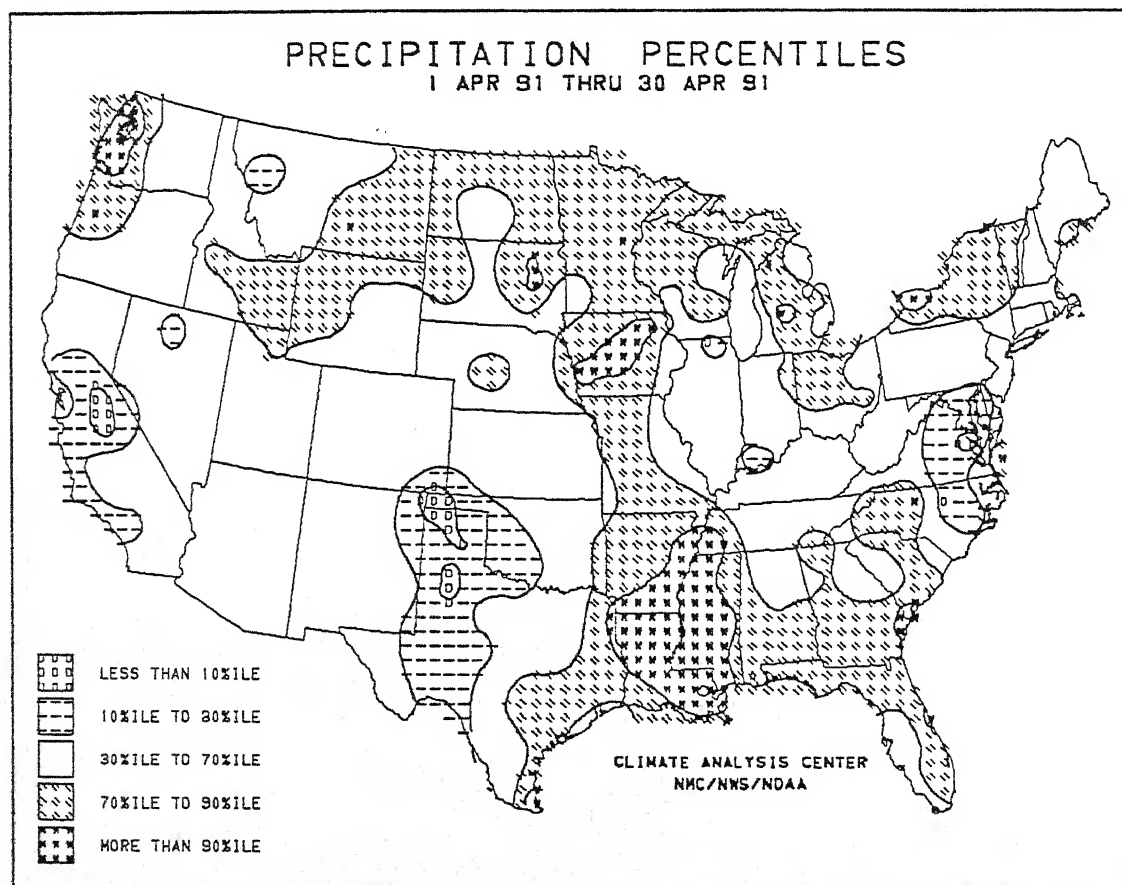


FIGURE 2. April 1991 Precipitation Percentiles. *Climatologically significant wetness affected much of the U.S., with portions of the Pacific Northwest, western Corn Belt, and lower Mississippi Valley experiencing one of the wettest 10% of all Aprils. In contrast, April 1991 was historically among the driest one-third of all such months in parts of the mid-Atlantic, the southern High Plains, and California.*

TABLE 3. APRIL 1991 AVERAGE TEMPERATURE 5.0°F OR MORE ABOVE NORMAL.

<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)	<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)
NOME, AK	+7.3	25.3	KING SALMON, AK	+5.4	36.6
INTERNATIONAL FALLS, MN	+6.7	44.8	MT. WASHINGTON, NH	+5.4	28.0
BURLINGTON, VT	+6.5	49.1	MCALLEN, TX	+5.3	80.7
BETHEL, AK	+6.3	30.0	GRAND FORKS, ND	+5.3	45.9
TRAVERSE CITY, MI	+6.1	48.6	TAMPA, FL	+5.2	76.8
HANCOCK, MI	+6.1	43.2	VALPARAISO/EGLIN AFB, FL	+5.2	70.9
ERIE, PA	+5.9	51.4	BUFFALO, NY	+5.2	50.5
FARGO, ND	+5.8	48.0	PELLSTON, MI	+5.2	45.0
MINOT, ND	+5.7	46.7	FAIRBANKS, AK	+5.2	35.6
MONTPELIER, VT	+5.7	46.5	SYRACUSE, NY	+5.0	51.1
BIG DELTA, AK	+5.6	36.5	MILWAUKEE, WI	+5.0	49.6
JAMESTOWN, ND	+5.5	46.8	BINGHAMTON, NY	+5.0	49.3
ST. LOUIS, MO	+5.4	61.5	HOUGHTON LAKE, MI	+5.0	46.9
AKRON, OH	+5.4	54.0	BARROW, AK	+5.0	3.5
DEVIL'S LAKE, ND	+5.4	45.3			

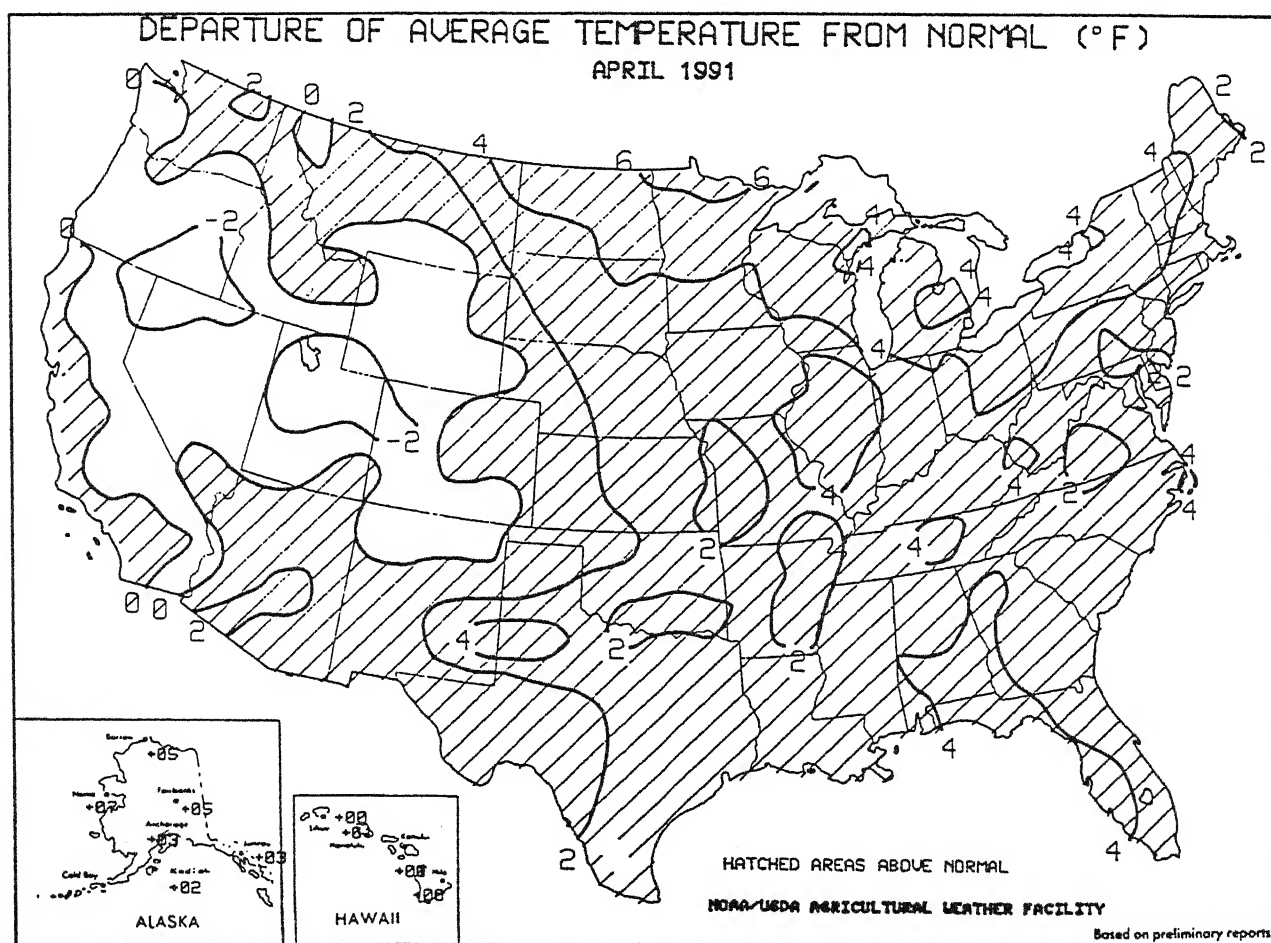
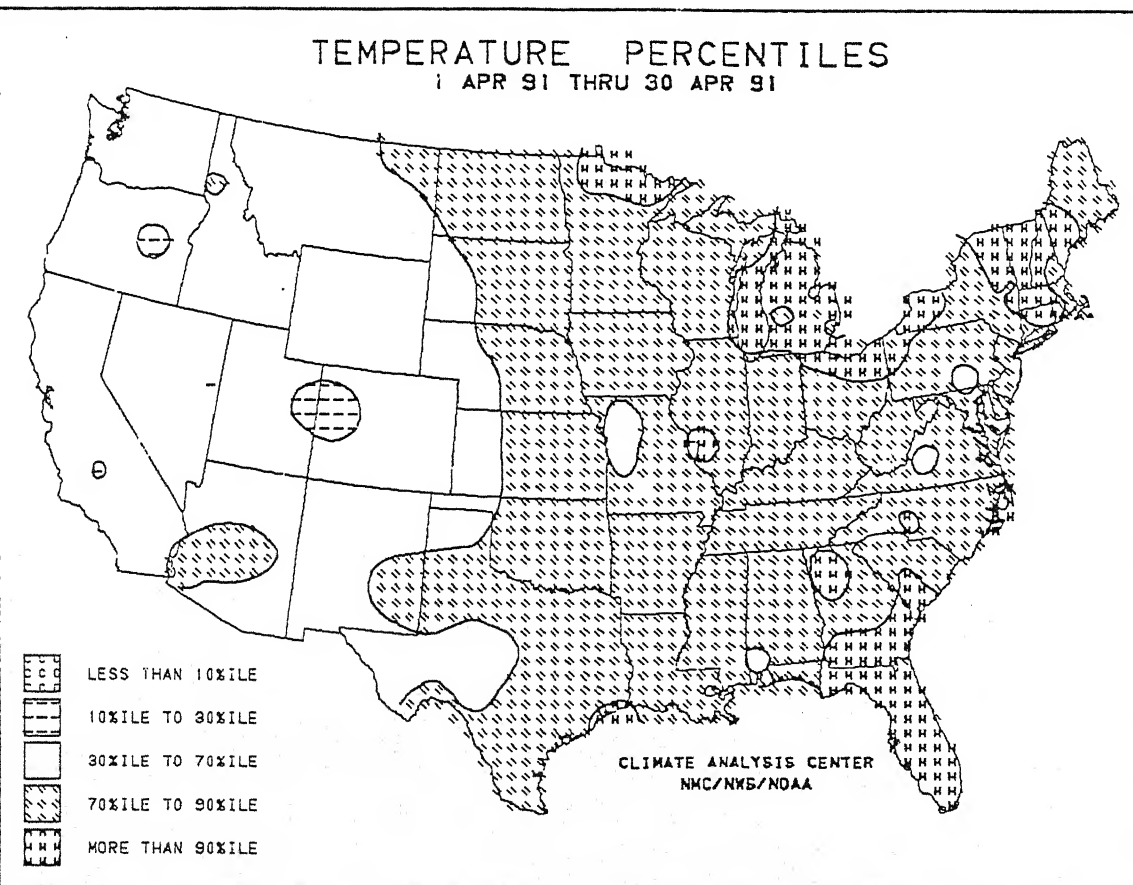


FIGURE 3. April 1991 Departure of Average Temperature from Normal (°F). *Isopleths drawn only for -2, 0, 2, 4, and 6 degrees Fahrenheit. Most of the nation experienced a warmer than normal April, with monthly departures reaching 6°F in extreme northern portions of Minnesota. Significant negative departures (below -2°F) were limited to portions of the west-central Rockies, northern Great Basin, and southern Cascades.*

TABLE 4. APRIL 1991 AVERAGE TEMPERATURE 2.0°F OR MORE BELOW NORMAL.

	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
LL AFB, UT	-4.4	45.2	ELY, NV	-2.3	38.7
CA	-3.8	56.5	BURNS, OR	-2.3	40.8
NV	-3.1	47.8	UKIAH, CA	-2.3	53.5
NCTION, CO	-2.7	48.7	MEACHAM, OR	-2.2	38.2
ELD, CA	-2.7	59.9	WINNEMUCCA, NV	-2.2	43.2
ON, NM	-2.5	48.8	WALLA WALLA, WA	-2.0	51.1
UMMIT, OR	-2.4	39.7			



4. April 1991 Temperature Percentiles. Only a few scattered parts of the central Rockies and Cascades had an April among the cooler 30% of the climatological distribution while much of the eastern two-thirds of the climatologically significant warmth. April 1991 was among the warmest 10% of all Aprils in portions of the Pacific, Northeast, eastern Great Lakes, and northern Minnesota.

TABLE 5. RECORD APRIL PRECIPITATION.

<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>NORMAL</u> (INCHES)	<u>PCT. OF</u> <u>NORMAL</u>	<u>RECORD</u> <u>TYPE</u>	<u>RECORDS</u> <u>BEGAN</u>
SHREVEPORT, LA	21.84	4.67	467.7	HIGHEST	1947
MEMPHIS, TN	17.13	5.75	297.9	HIGHEST	1871
JACKSON, MS	15.95	5.66	281.8	HIGHEST	1947
VICTORIA, TX	11.09	2.61	424.9	HIGHEST	1961
SAVANNAH, GA	10.57	3.17	333.4	HIGHEST	1945
BROWNSVILLE, TX	10.35	1.56	663.5	HIGHEST	1937
ASTORIA, OR	9.47	4.75	199.4	HIGHEST	1951
WATERLOO, IA	8.53	3.54	241.0	HIGHEST	1949
KODIAK, AK	8.05	3.64	221.2	HIGHEST	1949
ORLANDO, FL	7.72	2.26	341.6	HIGHEST	1943
SEATTLE-TACOMA, WA	6.53	2.39	273.2	HIGHEST	1878
HURON, SD	5.59	1.98	282.3	HIGHEST	1939
HOUGHTON LAKE, MI	4.73	2.58	183.3	HIGHEST	1964
BURNS, OR	0.04	0.67	6.0	LOWEST	1947
SAN BERNARDINO, CA	0.00	1.44	0.0	LOWEST	1871
FLAGSTAFF, AZ	0.00	1.30	0.0	LOWEST	1951
CLAYTON, NM	0.00	1.05	0.0	LOWEST	1951
LONG BEACH, CA	0.00	1.00	0.0	LOWEST	1877
LOS ANGELES, CA	0.00	0.91	0.0	LOWEST	1947
TUCUMCARI, NM	0.00	0.87	0.0	LOWEST	1951
CLOVIS/CANNON AFB, NM	0.00	0.80	0.0	LOWEST	1930
PRESCOTT, AZ	0.00	0.76	0.0	LOWEST	1951
BLANDING, UT	0.00	0.67	0.0	LOWEST	1906
VICTORVILLE/GEORGE AFB, CA	0.00	0.42	0.0	LOWEST	1939
TUCSON/DAVIS-MONTHAN AFB, AZ	0.00	0.39	0.0	LOWEST	1892
ALBUQUERQUE, NM	0.00	0.39	0.0	LOWEST	1931
GLENDALE/LUKE AFB, AZ	0.00	0.34	0.0	LOWEST	1918
TUCSON, AZ	0.00	0.30	0.0	LOWEST	1947
FAIRBANKS, AK	0.00	0.27	0.0	LOWEST	1930
DAGGETT, CA	0.00	0.27	0.0	LOWEST	1951
PHOENIX, AZ	0.00	0.26	0.0	LOWEST	1877

NOTE: Trace precipitation is considered ZERO precipitation. Stations with no precipitation are only included if normal precipitation is 0.25 inches or more.

TABLE 6. RECORD APRIL AVERAGE TEMPERATURES.

<u>STATION</u>	<u>AVERAGE</u> (°F)	<u>NORMAL</u> (°F)	<u>DEPARTURE</u> (°F)	<u>RECORD</u> <u>TYPE</u>	<u>RECORDS</u> <u>BEGAN</u>
BURLINGTON, VT	49.1	42.6	+6.5	HIGHEST	1947
ERIE, PA	51.4	45.5	+5.9	HIGHEST	1954
AKRON, OH	54.0	48.6	+5.4	HIGHEST	1944
TAMPA, FL	76.8	71.6	+5.2	HIGHEST	1947
BINGHAMTON, NY	49.3	44.3	+5.0	HIGHEST	1952
CAPE HATTERAS, NC	64.0	59.4	+4.7	HIGHEST	1875
SAVANNAH, GA	70.0	66.0	+4.0	HIGHEST	1951
NEW YORK/LA GUARDIA, NY	55.6	51.8	+3.8	HIGHEST	1947
WEST PALM BEACH, FL	77.0	73.9	+3.1	HIGHEST	1951

TABLE 7. RECORD APRIL EXTREME TEMPERATURES.

<u>STATION</u>	<u>EXTREME</u> (°F)	<u>DATE</u>	<u>RECORD</u> <u>TYPE</u>	<u>RECORDS</u> <u>BEGAN</u>
KEY WEST, FL	90	26 APR 91	HIGHEST	1945

PRECIPITATION RANKINGS FOR JAN-APR 1991, BASED ON THE PERIOD 1895 TO 1990. 1 = DRIEST, 97 = WETTEST.

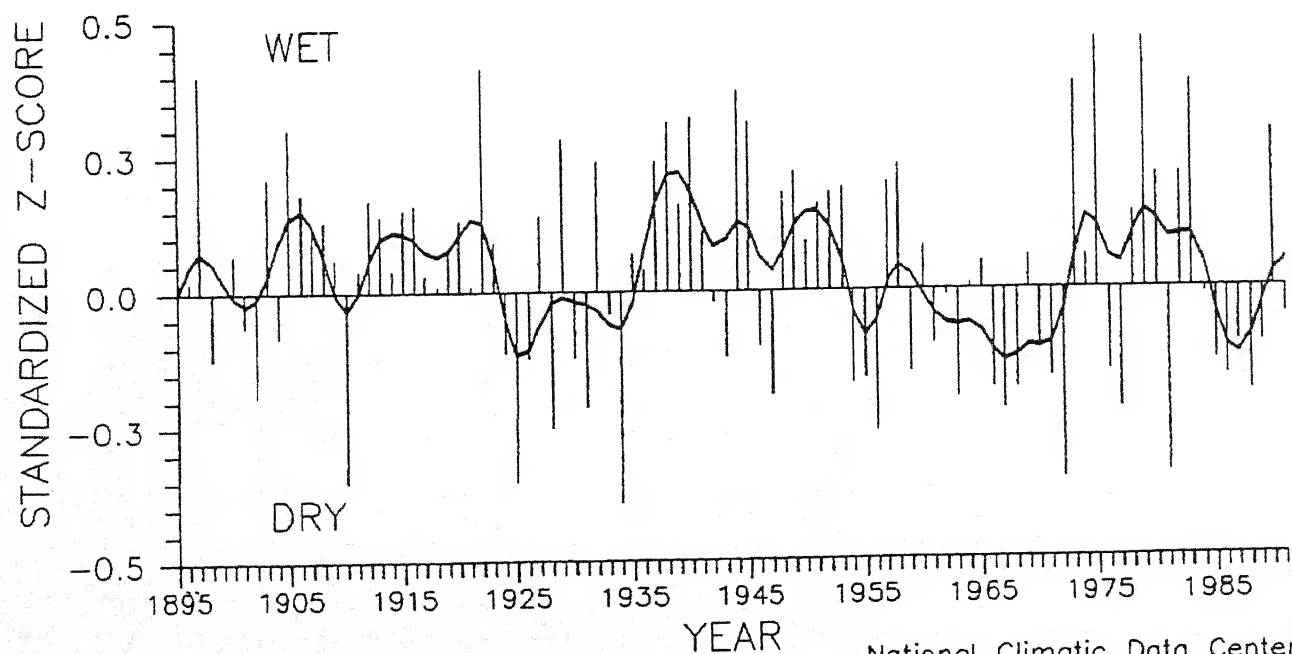
<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>
AL	85	IA	93	NE	60	RI	80
AZ	63	KS	16	NV	28	SC	71
AR	75	KY	55	NH	29	SD	81
CA	41	LA	97	NJ	62	TN	67
CO	15	ME	45	NM	21	TX	70
CT	45	MD	53	NY	71	UT	16
DE	68	MA	59	NC	71	VT	28
FL	96	MI	68	ND	56	VA	63
GA	90	MN	90	OH	51	WA	80
ID	18	MS	94	OK	16	WV	70
IL	36	MO	39	OR	11	WI	85
IN	49	MT	58	PA	29	WY	16

National Climatic Data Center

Top 10 rankings : **BOLD**

Bottom 10 rankings : *Italics*

U.S. NATIONAL MEAN PRECIPITATION INDEX
JANUARY-APRIL, 1895-1991



National Climatic Data Center

January - April Nationally Averaged Precipitation Index, 1895-1991, As Computed By The National Climatic Data Center. *The first four months of the year have been below median precipitation (37th driest such period), and seven of the last eight years have been below the median. This index takes into account the local normal climate so that typically wet regions (such as the lower Mississippi Valley) do not dominate the index value.*

TEMPERATURE RANKINGS FOR JAN-APR 1991, BASED ON THE PERIOD 1895 TO 1991. 1 = COLDEST AND 97 = WARMEST.

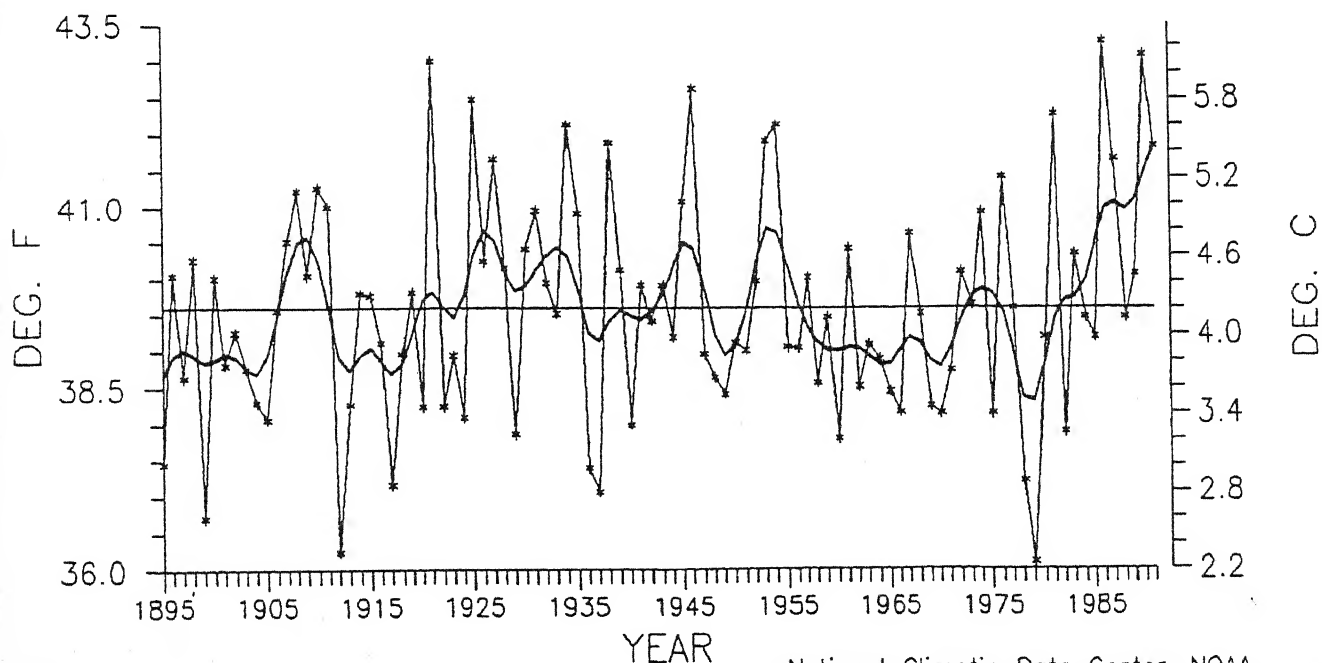
<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>
AL	74	IA	84	NE	89	RI	95
AZ	58	KS	90	NV	64	SC	82
AR	71	KY	87	NH	95	SD	87
CA	56	LA	66	NJ	93	TN	82
CO	61	ME	71	NM	64	TX	67
CT	93	MD	91	NY	93	UT	34
DE	89	MA	91	NC	89	VT	94
FL	92	MI	89	ND	90	VA	93
GA	79	MN	85	OH	92	WA	66
ID	77	MS	73	OK	90	WV	88
IL	87	MO	82	OR	69	WI	86
IN	89	MT	85	PA	94	WY	85

National Climatic Data Center

Top 10 rankings : **BOLD**

Bottom 10 rankings : *Italics*

U.S. NATIONAL TEMPERATURE
JANUARY-APRIL, 1895-1991



National Climatic Data Center, NOAA

January - April Nationally Averaged Temperatures, 1895-1991, as Computed by the National Climatic Data Center. *The year has gotten off to an unusually mild start. Only four years (1990, 1986, 1953, & 1921) have been warmer. The smooth line indicates the long-term trend and has reached unprecedented high levels, due to unusual warmth in 1986, 1987, 1990, and 1991 and to the lack of intervening persistent January-April cold spells during the last nine years.*

CALIFORNIA STATEWIDE PRECIPITATION JANUARY 1982–APRIL 1991

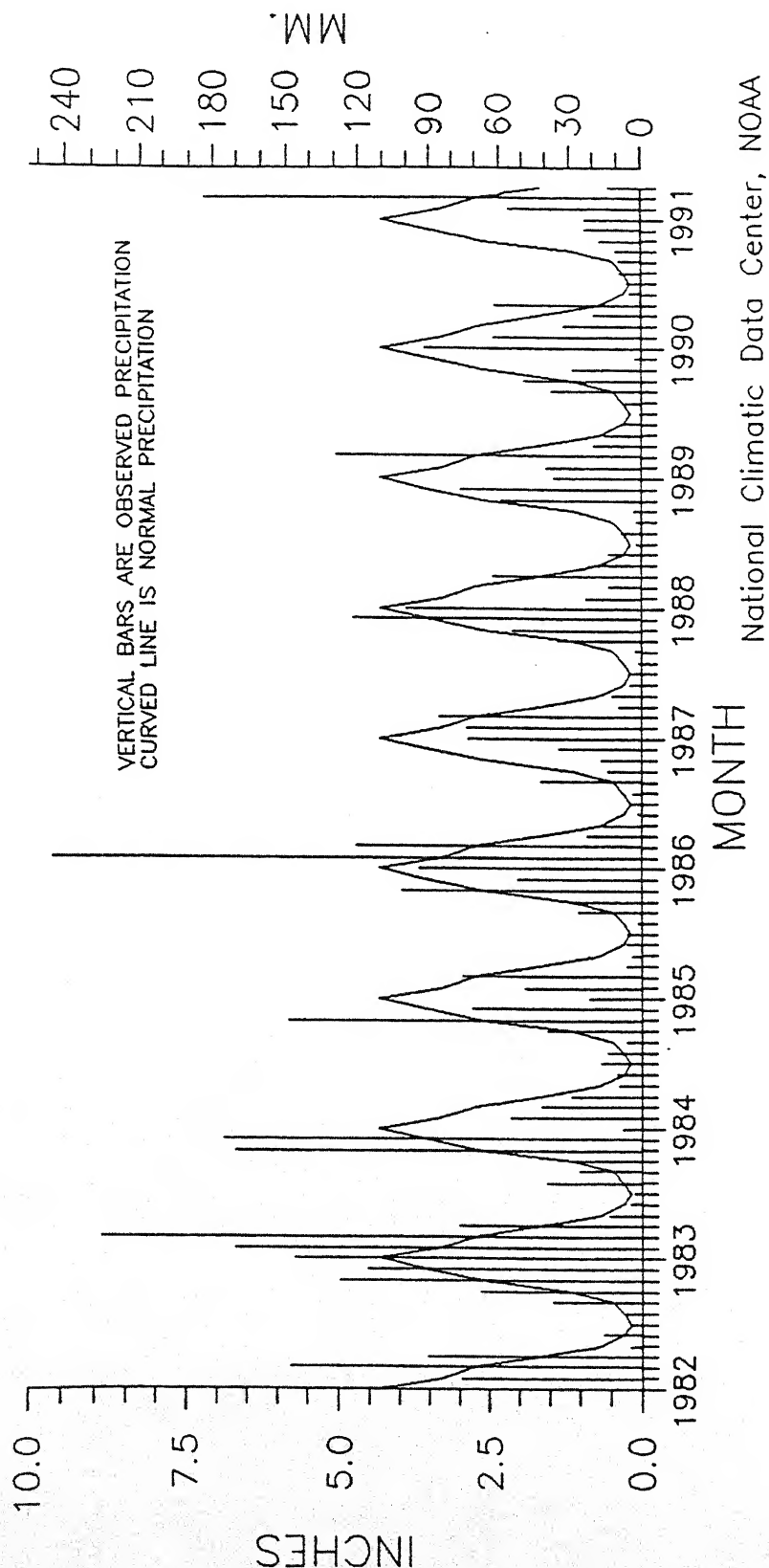


FIGURE 5. January 1982–April 1991 monthly precipitation for California. After an exceptionally wet March, only very light precipitation fell during April, signalling an early end to the wet season. Few, if any, significant precipitation events should affect the state before next autumn as the state's typically dry season progresses (May through September).

SPECIAL CLIMATE SUMMARY

SOUTHERN REGIONAL CLIMATE CENTER

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Information Compiled From:

NEWS SOURCES

and

**THE ANALYSIS AND INFORMATION BRANCH, CLIMATE ANALYSIS CENTER,
NATIONAL METEOROLOGICAL CENTER, NATIONAL WEATHER SERVICE, NOAA**

Torrential rains have saturated the lower Mississippi Valley for the last five weeks (Figure 1). Much of the region has received more than twice the normal rainfall during this period, with portions of northwestern Louisiana reporting more than five times the normal totals (Figure 2). Some rivers and bayous have remained out of their banks for weeks on end, resulting in prolonged residential flooding that has damaged sewage treatment facilities, isolated neighborhoods, closed schools, and left more than 8,000 individuals homeless. Ironically, the rains also damaged or destroyed a few water collection facilities, leaving some communities with very low supplies of fresh, potable water.

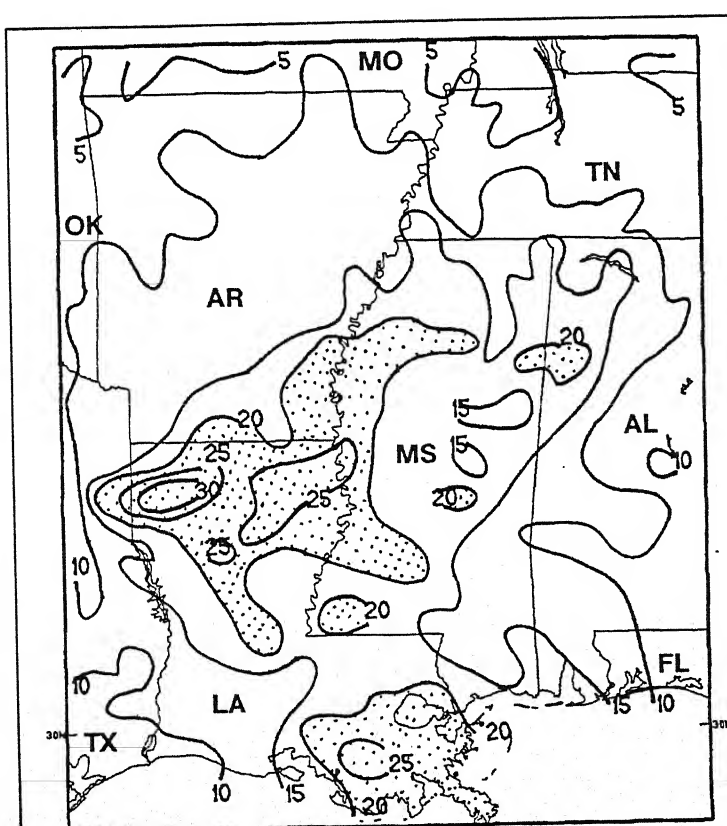


FIGURE 1. Total Precipitation During April 7 – May 11, 1991. Isopleths drawn only for 5, 10, 15, 20, and 25 inches. Showers and thunderstorms, some with powerful wind gusts, large hail, tornadoes, and inundating cloudbursts, battered much of the region, resulting in widespread flooding, ruined crops, navigational problems, and potable water shortages, according to press reports and the Southern Regional Climate Center.

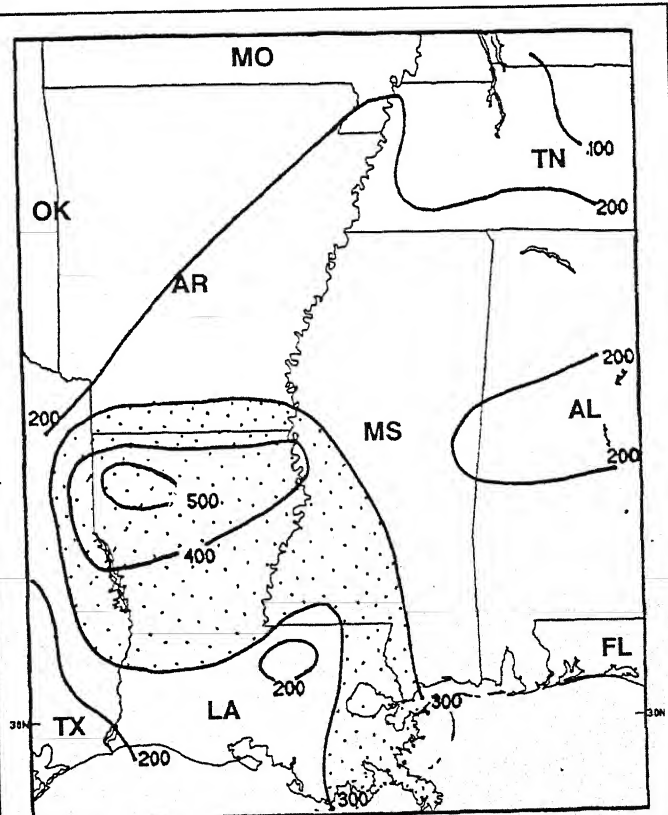


FIGURE 2. Percent of Normal Precipitation During April 7 – May 11, 1991. Isopleths drawn only for 100, 200, 300, 400, and 500 percent. Much of Louisiana has measured three times the normal rainfall while northwestern sections of the state reported more than five times the long-term normal for the period.

Additionally, farmland flooding has ruined many rice plantings, delayed or prevented cotton planting, threatened much of the vegetable crop, and impeded the development of sugar cane. The deluge has also taken its toll on navigation along the southern end of the Mississippi River and hampered fishing efforts. Mississippi crawfish growers alone may face losses exceeding \$34 million, according to press reports.

The recent wet spell has been especially trying for the region because it followed two to five months of persistently above normal rainfall. Since October 1, most of the lower Mississippi Valley has measured more than 40 inches of rain, with totals exceeding five feet in portions of northwestern and southeastern Louisiana as well as along the east-central Gulf Coast, where inundating cloudbursts occurred earlier in the year (Figure 3). Shreveport, LA, one of the most severely affected locations, has measured consistently above normal rainfall throughout the last 7 months, with the departure significantly increasing during the last 5 weeks (Figure 4).

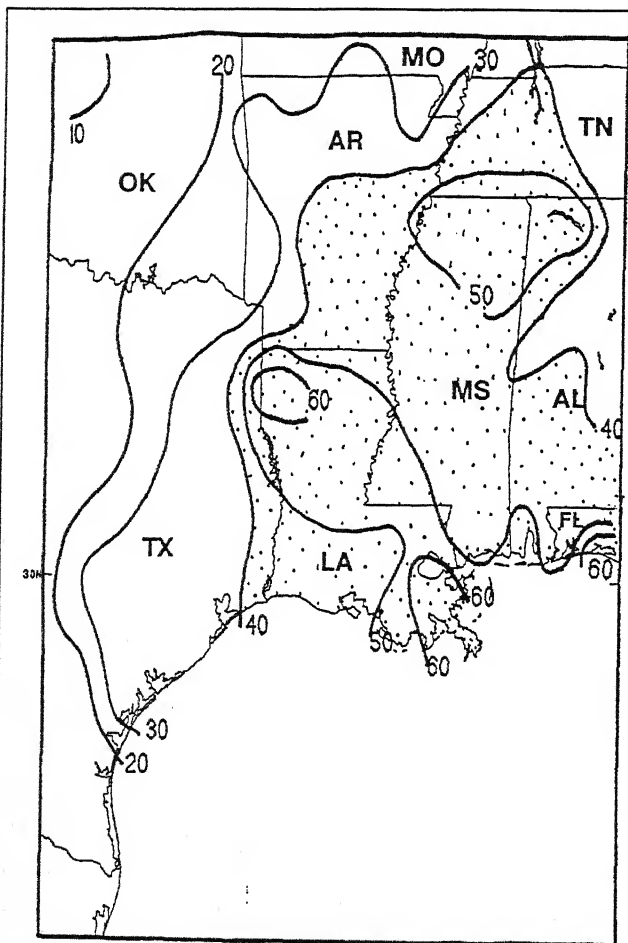


FIGURE 3. Total Precipitation during October 1, 1990 – May 11, 1991. *Isopleths drawn only for 10, 20, 30, 40, 50, and 60 inches. More than 5 feet of rain fell during the period across portions of Louisiana, which is more than 34 inches above normal at some northwestern sites.*

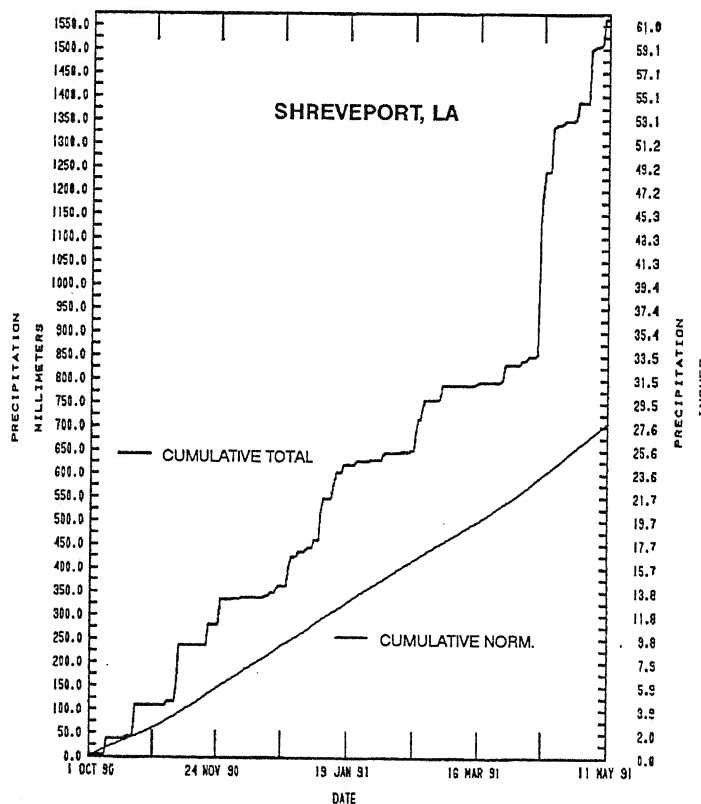


FIGURE 4. Cumulative Total vs. Normal Precipitation at Shreveport, LA from October 1, 1990 through May 11, 1991. *The normal and total points plotted for any given date refer to the period October 1, 1990 – that date. Well over twice the normal precipitation has fallen during the period, with the surplus increasing markedly during the past 5 weeks.*